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## The Sixteenth International Railway Congress

WHEN the first International Railway Congress to be held in Great Britain since 1925 meets in London on May 19-26, over 450 delegates from more than 30 different countries will meet in Church House, Westminster, to discuss current railway problems and latest techniques. H.R.H. the Duke of Gloucester, Honorary President of the Congress, will perform the formal opening ceremony at Church House on May 19, supported by Mr. Alan Lennox-Boyd, Minister of Transport & Civil Aviation; Monsieur M. de Vos, President of the International Railway Congress Association and General Manager of the Belgian National Railways; Sir Brian Robertson, Chairman of the British Transport Commission; Sir John Benstead, Deputy Chairman, and other Members of the Commission; Sir John Elliot, Chairman of the London Transport Executive; and civic representatives. Besides seven business sessions and sectional discussions at Church House, delegates will visit important railway centres, and will inspect recent examples of technical developments on British Railways and London Transport. Such visits will include Willesden carriage cleaning and servicing depot; electrical control rooms and substations on the Southern Region electrification; Swindon locomotive, carriage, and wagon works; London Transport workshops and depots at Lillie Bridge and Acton; Southampton Docks; the Liverpool Street-Shenfield electrification; the London Transport Central Line tube extension; Rugby locomotive testing station; and railway coastal protection works between Dover and Folkestone. There is also to be a special exhibition of British Railways and London Transport locomotives, rolling stock, and civil and signal engineering equipment at Willesden, which will be open to the public on May 26-29. Subjects to be discussed at the Congress include maintenance of permanent way; modernisation of station buildings; methods of financing modernisation; a survey of electric traction systems with a view to deciding whether there are relevant reasons for preferring one system to another; methods of improving steam locomotive efficiency; radiophonic communications in railway working; staff recruitment; railway participation in road transport; and the protection of electric equipment.

### British Participation

FIVE British officials are among the reporters who have collated international data in papers for consideration by the Congress: Dr. F. F. C. Curtis, Architect, and Mr. S. B. Warder, Chief Officer (Electrical Engineering), British Railways, British Transport Commission; Mr. S. G. Hearn, Operating Superintendent, London Midland Region; Mr. J. H. Fraser, Chief Officer (Signal & Telecommunications), British Railways, British Transport Commission; and Mr. T. S. Pick, Chief Electrical Engineer, London Transport Executive. Detailed arrangements for the Congress are being made, on behalf of the British Organising Commission, by an Arrangements Committee of Officers from British Transport Commission Headquarters, the Regions of British Railways, B.T.C. associated undertakings, and London Transport, under the chairmanship of Mr. J. L. Harrington, Chief Officer (Marine & Administration), British Transport Commission. Mr. C. E. Whitworth is English General Secretary of the Congress. To enable delegates from overseas Governments and railway administrations to inspect the most recent products of British manufacturers, seven leading trade organisations in co-operation with the Federation of British Industries are offering facilities for Congress delegates to visit any one of 74 different factories and industrial plants in various parts of the country.

### Institution of Locomotive Engineers President

MEMBERSHIP of the Institution of Locomotive Engineers is practically worldwide, and a long line of distinguished engineers, representing many facets of the locomotive industry, has served it as Presidents since its foundation in 1911. Specialists in railway spheres at home and overseas, consulting engineers, and manufacturers have been elected, covering the steam, diesel, and electric fields of locomotion. Although the scope of the Institution is not as broad as that of some other kindred bodies, it is, nevertheless, directly associated with the one factor without which a railway cannot exist, namely, the locomotive. Mr. A. Campbell, C.B.E., Chief Mechanical Engineer of the Crown Agents for the Colonies, and President Elect for the coming year, has been a Member of Council of the Institution since 1945, and Vice-President since 1950. He is the second representative from the Crown Agents, an organisation closely connected with railways in many parts of the world, to hold the important office of President. The first was Major C. E. Williams, C.B.E., then Chief Inspecting Engineer for the Crown Agents, who served as President of the Institution for 1933-34.

### Productivity on British Railways

ACTION taken by British Railways since nationalisation to increase their productivity is the subject of a further statement by the British Transport Commission published as an advertisement in the daily Press. Reference is made to economies achieved by closing goods and motive power depots and marshalling yards, and stress is laid

on the progress made, despite restrictions on capital expenditure, with mechanised handling methods and the adoption of pre-assembly methods in tracklaying. Figures are given showing the increase in operating efficiency in 1953 compared with 1938. This, it is stated, is reflected in the net ton-mileage per total engine-hour in traffic, which last year exceeded the prewar figure by 34 per cent, and increases of 29 per cent over 1938 are shown in the average wagon load throughout and freight train loads, and of 4 per cent in the freight train-miles per total engine-hour—these being the measurements of operating performance in which the greatest progress has been made since the war. The Commission knows, it is stated, that the productivity record of the railways is better than commonly believed, and that railwaymen know that their future depends on what they can do in the next few years to improve on that record.

## International Railway Conventions

THE texts of the revised International Railway Conventions signed on behalf of the United Kingdom at Berne in October, 1952, as commented on editorially in our November 7, 1952, issue, have been published by H.M. Stationery Office as Command Papers. The Conventions have been laid before both Houses of Parliament with a view to early ratification by the Government. To the two Conventions, one (C.I.M.) concerned with the carriage of goods, and the other (C.I.V.) with that of passengers and baggage, all European countries except the United Kingdom and the U.S.S.R. are parties. The four British main-line railway companies asked in 1946 that the United Kingdom should accede to the conventions, and the request was later renewed by the British Transport Commission in the light of the importance of traffic with the Continent, in particular the increasing volume of railway ferry traffic. The revised conventions provide for uniform transport documents, a uniform system of carriers' liability for loss or damage in transit, and improvements in the arrangements for claims, and also include special provisions to govern through rail-sea traffic. They apply only to carriage over such routes as are scheduled by the Contracting States at their discretion; those to be scheduled by the United Kingdom are under discussion with the British Transport Commission. It is hoped that the conventions will come into force early next year.

## New Marshalling Yard at Temple Mills

THE Eastern Region has been authorised to construct a new marshalling yard at Temple Mills, near Stratford, at a cost of £2,500,000. It will replace a group of out-of-date and uneconomic yards and save an estimated £150,000 a year. The working of the present nine flat yards and one hump yard is complicated, with an abnormal number of wagon shunting movements. There are also six dependent and relief yards, none more than five miles from Temple Mills. The work of 15 of the yards will be concentrated in one main and two reservoir yards; only one of the dependent yards will remain. There will be six reception lines and fifty sorting sidings. Features designed to increase the speed of shunting will include two-stage braking by means of primary and secondary retarders and a release line beyond the crown of the main hump to enable one hump shunting engine to run clear. The new yard will be the seventh in the country to be equipped with electrically-operated points and retarders. Its completion will make possible a general acceleration of freight traffic to and from nine directions.

## Aspects of the World Railway Speed Record

PERFORMANCE curves published by the Société Alsthom, the builders of the Co-Co locomotive which on February 21 set up the world railway speed record of 150·9 m.p.h. on the French National Railways between Dijon and Beaune, show that this design has a balancing speed of 99·5 m.p.h. on the level in minimum field with 690 tons. There was, therefore, good reason to expect a dramatic result when the opportunity arose for a high-speed run with a load as light as the 109 tons of the test train. The limiting factor seemed likely to be the exceptional peripheral speeds involved in the motors, and the fact that no change was made in the gear ratio says much for the mechanical besides the electrical design. Another successful feature of the locomotive is the swing link pivoting system of the bogies, with transverse springs to provide a restoring force which adjusts itself to different displacements of the leading and trailing axles. The forces actually measured on the track during the record run were some two-and-a-half-tons less than the maximum permitted by the Permanent Way Department.

## Electrification in Bengal

THE team which is surveying electrification in and around Calcutta as part of a larger scheme covering the entire industrial belt of Western Bengal and Bihar is to make its report shortly. All the lines serving Calcutta are now part of the Eastern Railway. Electrification of former East Indian Railway lines from Howrah terminus to Bandel and Burdwan, some 60 miles, is expected to be completed in three years. The second phase of the scheme, electrification of the Howrah-Burdwan chord, will follow, and is estimated to take two years. Electrification of the lines running out of Sealdah terminus east of the Hooghly, served by the former Eastern Bengal Railway, will be carried out in two stages in five years' time; the first stage will include the proposed Calcutta circular railway and the second will extend electrification as far as Naihati, 24 miles from Sealdah. The total power requirement for the electrified lines is put at 50,000 kW. a day and would be met by two outside electrical undertakings. Some 236 route-miles of line are at present electrically worked in India, the 18 miles from Madras to Tambaram on the Southern (former South Indian) Railway, and the remainder on the Western (former B.B.C.I.) and Central (former G.I.P.) railways leading out of Bombay as far as Virar, and Igatpuri and Poona respectively.

## Trackwork Ancillary to Bridge Reconstruction

PROCEDURE on London Transport railways for including permanent way operations in the programme and estimates for the reconstruction of a bridge, and the works subsequently entailed, are described by Mr. H. C. Trissler in a recent paper to the London Section of the Permanent Way Institution. After studying the Civil Engineer's drawings and proposed method of carrying out the bridgework, the Assistant Civil Engineer (Permanent Way) submits estimates for the trackwork in all stages of the reconstruction. Similar estimates are prepared by the Signal and the High Tension Mains Engineers. Meanwhile, contractors tender for the bridgework, and a comprehensive estimate is submitted by the Civil Engineer to the Executive. A meeting is then held with the Assistant Civil Engineer (Structures) in the chair, and representatives of all the Executive's departments concerned and the successful contractors, to discuss and agree the broad outline of the programme. Further meetings during the work discuss details stage by stage. The Chief and Line Inspectors are fully informed of the agreed programme, and attend subsequent meetings. The Line Inspector is responsible for arranging line possession, ballast trains, labour, lighting, and look-out protection. Mr. Trissler described several methods of replacing bridge spans and the trackwork entailed, and concluded with details of the special maintenance needed by longitudinal bridge timbers.

## Australian Desert Lines

DELIVERY of 14 Birmingham-Sulzer-Crompton diesel-electric locomotives of 955 h.p. to the Commonwealth Railways of Australia draws attention to two unusual railways in that continent, for these 62½-ton 3-ft. 6-in. gauge locomotives are intended specifically for the 771-mile Central Australia line from Port Augusta to Alice Springs,

and for the isolated 316-mile Northern Australia line running inland from Darwin to Birdum. Both these lines were built originally by the South Australian Railways—the former as far as Oodnadatta in 1879-91, and the Northern line for 146 miles from Darwin to Pine Creek in 1889. The Central line was acquired by the Commonwealth in 1911, but continued to be worked by the S.A.R. until 1925, when the Commonwealth Railways took it over and extended it in 1928-29 for another 293 miles. The Northern line was also acquired by the Commonwealth in 1911, but was worked by the administrator of Northern Territory until 1918 when it came under C.R. control. An extension had been made to Emungalan in 1917 and the final one to Birdum was made in 1928-29. Curiously the two lines have different braking systems. The C.A.R. has always been a paying proposition, thanks to the coal traffic from Leigh Creek, to which place a new line from Port Augusta is under construction. In the prevailing economic circumstances of the region the Northern Section cannot be worked at a profit, but it fulfils an important purpose in the economic development of the territory it serves.

## Changes in the Crown Agents

THE news, recorded in our last week's issue, that the Crown Agents for the Colonies shall, from April 1, be styled "The Crown Agents for Oversea Governments and Administrations" follows a bare week on the earlier announcement that, after a distinguished career of over 30 years' service with the Crown Agents, Mr. R. W. Foxlee, C.M.G., C.B.E., M.I.C.E., Engineer-in-Chief to the Crown Agents for the Colonies, and Engineering Adviser to the Secretary of State for the Colonies, will retire from his present positions in the early summer.

The two announcements carry the implications of far-reaching changes in the working of the Crown Agents. The functions of that body have been little publicised, and the administration has always been ready to hide the light of the widespread nature of its service at home and overseas under a bushel. The following article outlines these services, and it remains to be seen whether the change of style of the body will bring with it any resultant change in its policy.

That the retirement of Mr. Foxlee in his present capacities will present a loss to the railway world is undeniable. In addition to his long association with most consultants in Westminster and with the management of heavy industry in this country, with which he has had extensive business connections, Mr. Foxlee is very much a railway man. Details of his family railway connections appear elsewhere in this issue, as does also a brief reference to his keen interest in the principles of standardisation.

The series of Conferences called by the Colonial Office for the standardisation of Colonial railway equipment—the latest of which takes place at the end of this month, and at which Mr. Foxlee will be taking the Chair—was instituted as a result of many years of his labours dating back to 1928, when he began to investigate the problems of unification of railway gauges in Africa. As a result of his initial enquiries, agreement was reached to adopt 3 ft. 6 in. gauge as the future policy of all railways in tropical Africa. Mr. Foxlee read a Paper on this subject at the Conference of Civil Engineering Problems in the Colonies convened by the Institution of Civil Engineers in 1948.

Another field to the improvement of which he has made outstanding contribution is that of railway permanent way. He introduced a simple method of rail attachment permitting the ready conversion of metre to standard gauge. This has been adopted throughout the railways of East Africa.

Mr. Foxlee's work in standardisation has not confined itself to railway equipment. All manner of railway construction received his attention. Sleepers are a case in point. At the outset of his investigations there were over a dozen types of sleepers used on Colonial railways; these have now been reduced to three. Costs have been greatly reduced, and problems of supply much simplified.

An important fact which emerges from Mr. Foxlee's work in standardisation is the necessity for early action. Twenty years of determined effort in East Africa have brought about a situation in which it is actually cheaper to convert as time goes on. Such experience is directly opposed to that of many other railway companies faced with the problems of standardisation throughout a large and long-established system, not the least of which is that of prohibitive cost. It should not pass unrecorded that Mr. Foxlee's convictions and initial moves in his campaign for early standardisation met with considerable opposition and his predicted results were received with incredulity; actual results have, nonetheless, amply justified his theories. His work in East Africa has turned the ultimate rail link-up across the continent from a nebulous possibility to a reality that should occur within the next 10 or 20 years.

In addition to his duties as Engineer-in-Chief, Mr. Foxlee has in recent years advised the Secretary of State on important questions of policy. This has been a separate function which he undertook in a private capacity. His position has thus been unique, combining several functions of great value to all aspects of transport.

Mr. Foxlee's retirement from the service of the Crown Agents will not entail his complete removal from the engineering scene. He intends to retain certain of his private engineering interests, and it is likely that Westminster will continue to see much of him. This is as it should be: so energetic and productive a mind has still much to contribute to the engineering world.

## Non Profit-Making Service

WHEN the style of the Crown Agents for the Colonies changes on April 1 to that of "The Crown Agents for Oversea Governments and Administrations," an organisation formed as long ago as 1833 under the title "Agents General for the Crown Colonies" will, for the second time in its history, demonstrate the elasticity of its conception and the determination of its central authority to keep abreast with current trends.

Thirty years after the formation of the "Agents General for the Crown Colonies," a non profit-making agency designed to undertake in one office business transactions for Crown Colonies, the organisation was reborn as the Crown Agents for the Colonies partly because the business of the office had so enlarged as to include territories which were not Crown Colonies. Over forty years afterwards, analogous circumstances obtain. At the present time, the Crown Agents act not only for governments for the administration of which ultimate responsibility rests with the Secretary of State for the Colonies, but also (with the permission of the Secretary of State) for a number of governments and other principals which do not fall into that category. The Governments of Iraq and Jordan, once mandated territories, continue to transact business through the Crown Agents, as does also the Government of Ceylon, which has recently acquired dominion status, to name only two examples.

The Crown Agents are unique in their functions, organisation, and authority. Ultimately responsible to the Secretary of State for the Colonies, by whom they are appointed and to whom they must present an annual audit of their accounts, they receive their instructions direct from their principals, for whom they are agents in the United Kingdom. Although the number of staff—which is recruited, except in the cases of professionals and specialists, from the Civil Service Commission lists—is regulated by the Secretary of State for the Colonies, and although pay and conditions, also regulated by the Secretary of State, resemble those of the United Kingdom Civil Service, the Crown Agents are not Civil Servants. The office is a business organisation which performs its services and maintains itself without any Government aid whatsoever. The popular misconception that the Crown Agents form a Government department and that it is financed by the Exchequer has no basis in fact. Expenses are met by charging certain fees at rates approved by the Secretary of State for the Colonies. These charges are kept very low, no charge being made for many services performed, and any profits occurring are ploughed back into a reserve fund which has a two-fold

function. Normally it provides a pool to tide the office over bad years. When, however, as recently occurred, the reserve becomes more than sufficient, charges are reduced and the surplus is disposed of by means of very considerable distributions to principals each year in proportion to business done. By this method, each participant enjoys a fair share of benefit.

In a short article it is impossible to describe fully the scope of the business with which the office occupies itself. Although it acts as agent for official purposes only and cannot take on business for commercial concerns, this could almost be said to be the office's only restriction. In addition to the supply of anything from a toothbrush to a locomotive, the Crown Agents handle purchase, shipment, insurance and inspection of stores; designs and specifications; contracts; negotiation, issue and management of loans; investments and liquid balances; transfer of Colonial stocks; payments, salaries, allotments, pensions, estates, widows' and orphans' pensions schemes. They undertake to select and engage personnel and make arrangements for passages. Postage stamps are wholesaled, literature published and sold. Four drawing offices, a packing warehouse and a laboratory are maintained. Liaison with shipping companies is preserved by a branch of the Shipping Department in the City of London, where advice may be obtained on special freight problems. A stock transfer branch is also maintained in the City for the convenience of brokers.

The Crown Agents purchase, inspect, ship and insure stores and plant to a very great value each year. Over 107,000 orders to an aggregate value of £60½ millions were placed in 1953. These included locomotives, rolling stock, bridges, rails, buildings, and all classes of railway material.

The entire organisation is divided broadly into an executive staff and a technical staff. The present holders of the titles of Crown Agents are Sir George Frederick Seel, K.C.M.G., and Sir George Beresford-Stooke, K.C.M.G. The Engineering Departments, of which there are four, presided over and directed by the Engineer-in-Chief, deal with all branches of the field. They act as advisers and consultants for all kinds of civil and mechanical engineering projects. The design of bridges and other structural work is undertaken, and detailed inspection is made of locomotives and rolling stock. In the preceding article on the retirement of the present Engineer-in-Chief, Mr. R. W. Foxlee, reference has been made to the great benefits and economies effected by the timely introduction of standardisation throughout the East African railways: this example is merely one of many which could be quoted to illustrate the polymorphic functions of the Crown Agents.

## Subsidies and Freight

THE chief point emerging from the debate on the prayers for annulment of the Railways (Additional Charges) (Amendment) Regulations, 1954, in the House of Commons on March 17, was that the Minister of Transport and Civil Aviation, Mr. Alan Lennox-Boyd, had no intention of supporting the suggestion that a subsidy should be granted to assist the railways to meet their current expenses. The Government, the British Transport Commission, and Sir Brian Robertson are all in complete agreement on this point. Several Members regard some form of subsidy as a necessity if the needs of the remoter areas are to be met by the railways, and the precedents of the MacBrayne steamer services in Scotland and agriculture in Northern Ireland were quoted. The whole social question of population in areas distant from their markets is raised in this suggestion but the problem would seem one for consideration on a national rather than a transport basis.

As matters stand, the British Transport Commission has a duty to make its undertaking pay, and this can only be achieved by charging rates which reflect the trend of costs. Wholesale prices have risen by 303 per cent, but railway rates, including this latest increase, have risen by only 253 per cent. But for the Regulations authorising the recent increase in charges, the Commission would add some £500,000 to its accumulated deficit each week.

There were several suggestions that the system of tapering rates might be extended to include additional steps at 150 and 200 miles, and so on, but, as the Minister pointed out, the incidence of terminal charges remains constant irrespective of distance, thus producing a taper additional to that at the present steps of 20, 50, and 100 miles. Mr. Lennox-Boyd agreed that these matters needed reconsideration from time to time and the Cameron Report, quoted in the debate, made a plea for further steps at 150, 200, and 300 miles. It may be that these recommendations will be reflected in the railway freight charges scheme which is now expected to be placed before the Transport Tribunal within the next three months. In the meantime an example of the efforts to meet these requirements already being made by the railways was quoted by the Minister. Seed potatoes, which figured prominently in the debate, are carried from Inverness to Ely, a distance of 505 miles, at 1·986d. for each ton mile. For the distance from Spalding to Preston the corresponding figure is 3·520d.

In stating that there could be no question of subsidies to meet current expenses, the Minister said that there could be no question of subsidy "whatever may have to be done to help the railways modernise their equipment," which seems to suggest that some scheme along these lines may be under consideration.

The new freight charges scheme must be the subject of a public inquiry, under the terms of Section 78 of the 1947 Transport Act, and there will then be an opportunity for the views of trade and industry to be heard. Apart from this, the Commission intends that a full opportunity shall be afforded for price consultations with using and other interests. Particular regard will be paid to any views put forward on behalf of Scottish industry. Under the new scheme it is intended that a higher proportion of transport costs shall be absorbed by "the really short-distance traffic"; this will be of benefit to medium- and long-distance hauls, including those from the Scottish areas on behalf of which the prayers were made. The Commission intends to quote commercial rates for general merchandise which will take load and distance more fully into account.

## January Operating Results

IN No. 1 of *Transport Statistics*, on the new form of which we commented last week, seven of the twelve tables refer to passenger business, and the only statistics of railway freight traffic—the main source of revenue—record tonnage originated and net ton-miles worked. An equal amount of space is allotted to inland waterways, which handle less than 5 per cent of the railway tonnage, work less than 1 per cent of railway ton-miles, and collect less than 1 per cent of railway freight revenue. The stereotyped statistics for British Railways, London Transport, and the rest of the Commission's undertakings, except British Road Services, are to appear quarterly in future. These issues of *Transport Statistics* can be reviewed in detail, but any comments on the four-weekly edition must be brief.

The impression gathered from the January number, covering the four weeks ended January 31, is that the British Transport Commission made a fairly good beginning to the new year, but, to judge by the advance statement of February traffic receipts, suffered an early setback. The tonnage originated by British Railways was the largest for any January period since nationalisation, but a greater increase on 1953 than 353,000 or 1·6 per cent, might have been expected. The official production index for January was 126 compared with 118 in 1953. The iron and steel industries were setting up fresh records of output, while the textile and most manufacturing industries were busy. In every January until 1953 British Railways originated over 4,000,000 tons of merchandise; this year's tonnage of 3,802,000 was 85,000 tons above 1953, but 545,000 tons below the peak year 1949. Minerals decreased by 118,000 tons but the situation was saved by an increase of 382,000 tons, or 2·8 per cent, in coal class traffic. Evidently hauls were long for all sorts of traffic, as net ton-miles rose 3·2 per cent. All Regions except the London Midland worked more ton-miles, the Eastern having the large increase of

24,672,000 (6·7 per cent) and the Western one of 14,897,000 (4·7 per cent); the Scottish Region reported an increase of 5·6 per cent in both tonnage and ton-miles.

Last year British Railways originated 985,229,000 passenger journeys, a decrease from 1952 of 3,698,000 (0·4 per cent). The Southern Region started 38 per cent of the total number of journeys and booked 2,006,000 more passengers (0·5 per cent). In sharp contrast the London Midland Region lost 6,970,000 passengers (3·1 per cent) and the Western 629,000 (0·6 per cent). All round there was a sharp decline in the issue of early morning and workmen's tickets, and a moderate decline in season ticket travel; the Southern Region, which accounted for over half the total number of season ticket journeys, had the small decrease of 624,000 (0·4 per cent). First class journeys numbered 20,052,000 a decrease of 1,440,000 (6·7 per cent) from 1953 and of over 9,000,000 compared with 1948 (31 per cent).

London Transport had a quiet spell in January, carrying 7,492,000 fewer people (2·4 per cent); rail and road traffic fell off in much the same proportion. Road passenger transport showed a small decrease of 434,000 passengers (0·3 per cent), the Tilling Group losing 1,074,000 and the Scottish Group gaining 640,000.

## Continental Traffic Prospects

NO more comprehensive short survey of the Continental services of British Railways probably exists than that made by Mr. L. H. K. Neil, Continental Traffic Manager, British Railways, Eastern and North Eastern Regions, in his paper "Continental Traffic—A Look Forward," read earlier this month to the Institute of Transport. In considering alternative methods of transport between Britain and the Continent, he believes that with the continuing development of air and the further development of cross-Channel steamship and ferry services, a Channel tunnel is unlikely to be a *fait accompli* within 25 years—the life of a ship, and surface transport can be planned on that assumption.

In passenger traffic, he shows that whilst the highest annual prewar figure of 2,829,000 has not been reached since the war, the total for the five prewar years was 11,257,000 whilst that for the postwar years was 12,290,000 —an increase of 9·18 per cent. The corresponding postwar air travel increase was 463 per cent. Whilst the surface total has not been reduced, the proportion of surface route passengers travelling second or third class to those travelling first has increased considerably since the war. Although this can be attributed in part to a loss to air of first class surface traffic, it is also largely the result of the rapid development of tourist parties, school parties, and so on. There is no doubt, he thinks, that air travel has created traffic, particularly among business men. The British Travel & Holidays Association, in conjunction with the air lines and British Railways, is tireless in its efforts to encourage foreigners to visit Britain. The more important tourist agencies in this country have built up new traffic, for many people had never realised that a Continental holiday could be enjoyed at low cost. There are holidays with pay and the desire of all classes to visit the Continent. Another reason for increased travel is the contact made between British and Continental families arising out of the last war and the present occupation forces. In view of this, future prospects for surface travel are bright, and he anticipates that for years to come there will be enough traffic for both surface and air routes.

Dealing with passenger accommodation in North Sea and cross-Channel ships, Mr. Neil explains the reasons for retaining two classes of accommodation, with a superior class for the many who are prepared to pay for it, both on day and night services. He is not in favour of shorter crossings with smaller and faster vessels, largely because of the reduction in amenities necessary in a smaller ship, her behaviour in bad weather, and the difficulty of arranging train services on Continental railways at peak traffic periods to connect with ships of smaller carrying capacity.

Such difficulties as exist at ports in conducting the Customs and Immigration formalities at peak traffic periods are largely the result of the construction of accommodation at ports at periods when the examinations were less strict than they are today. In boat trains he advocates provision of baggage racks of adequate size. For night travel on the Continent he suggests *couchettes*, six berths per compartment, in the lower class, as is now under consideration by the International Union of Railways; the reduced payload might be compensated in part by use of lighter stock.

Among the advantages of surface over air travel, presumably reliability, particularly in the winter months, must come first; there is greater baggage capacity; more room to move about; better accommodation for night travel and the ability to enjoy the countryside and, to some extent, to see cities and towns en route, and even in the distant future, Mr. Neil considers, there will be plenty of business for surface transport and there always will be a substantial section of the public with a strong preference for terra firma and ships.

Surface travel, however, should give up trying to compete with air to the more distant destinations such as Istanbul. It should concentrate on improving both in speed and comfort, journeys of up to, say, a night and day, for example, London to Rome, Vienna, Berlin, or the Scandinavian capitals, though there are agreeable combinations of rail and sea routes for longer journeys. On the shorter journeys of, say, 8-12 hr., such as London to Paris and London to Amsterdam, where a night service is provided, rail and ship can very well hold their own.

With fares, surface travel should be able to compete with air, provided the air policy of cutting fares and then calling upon the Government to make good losses until increased traffic has neutralised the reduction in fares, is not prolonged. Strict commercial considerations are premature whilst the fortunes of British aviation are still in the making, but meanwhile those engaged in surface transport are concerned at announcements of still cheaper air fares. It is disheartening to hear that London Airport is to become the finest in the world at an expenditure of nearly £7,000,000, with all sorts of amenities, when a mere fraction of that sum would suffice to make much needed improvements to some of the surface gateways to the Continent. Helicopters are not regarded as a serious menace to surface passenger transport, even if they are allowed to pick up and set down in cities. Ultimately the Government of the day, according to Mr. Neil, may have to insist on a spread-over of traffic among the various means of transport. Something of this sort may be foreseen in a statement by the Minister of Transport & Civil Aviation, Mr. Alan Lennox-Boyd, that the solution lies in the interlocking of all forms of transport to a greater degree than is allowed by present Governmental structure. Little can be done to recapture the increasing traffic using private motorcars, and the railways will have to be content with conveyance over the sea only. Motorcoach tours create a new traffic of their own, a development evidenced by the inauguration by some European railways of the Europabus organisation.

Most of British Railways and associated undertakings' shipping services to and from the Continent are primarily passenger services or train ferries, though the regular steamship services convey much perishable, parcels, and merchandise traffic. On the range of British railway services with the Continent, outside the Humber, there appears to be a tendency for hold cargo to decline and for the demand for conveyance in train ferries and in containers to increase. There is also the possible development of throughout conveyance of merchandise in road vehicles by what are known as transport ferries, but foreign road vehicles cannot circulate in Britain unless they conform to British construction and regulations; on the other hand, train ferries can carry merchandise in road vehicles, as could also the motorcar carriers now operating between Dover and Boulogne, so that there would be no immediate necessity for additional capital expenditure on road transport ferries.

As to the future of freight traffic, the regular passenger

services will continue to be in demand for the conveyance of perishables and other traffics of an urgent nature and should be able to command freight rates which such services justify; conveyance by train ferries is also likely to remain in demand; the ordinary cargo vessels, too, Mr. Neil considers, should continue to have a satisfactory stake in the trade provided due attention is paid to the container which, to an extent, can be their reply to the train ferry or transport ferry, although train ferries will presumably still retain some advantage in their ability to load larger tonnage to a wagon, compared with the container. The prosperity of all these must depend largely on the state of trade between Great Britain and the Continent. In planning, however, regard must be paid to such considerations as the high cost of shipbuilding.

The British short sea liner companies with whom British Railways compete to some extent for freight, should, he suggests, recognise that in the conveyance of merchandise by passenger vessels and train ferry—in effect a floating bridge—the railways are performing a function essentially within their legitimate sphere, whilst the cross-Channel railway cargo vessels are so few in service that from the private operators' standpoint they are not worth bothering about; but they are a safeguard against undue depression of rates. Like the short sea liner companies, they were built up on private enterprise, and existed for 80 years before nationalisation of the railways.

The fares and rates paid by the people of Britain, it is pointed out, do not contain a concealed subsidy to railway shipping; the steamships accounts are debited with every element of operating and administrative costs and also with their full measure of depreciation on capital invested.

# LETTERS TO THE EDITOR

*(The Editor is not responsible for opinions of correspondents)*

## Branch Line Closing

March 18

SIR,—May I thank Mr. J. N. Faulkner, through your columns, for his suggestion in your March 12 issue that branch line passenger services, normally withdrawn, should be restored on Saturdays only or on market days?

Generally speaking, however, the effect of this proposal would be to require the maintenance of signalling arrangements and permanent way at a higher standard than that needed for freight traffic, thus nullifying what are usually two of the principal sources of economy arising from the withdrawal of unremunerative passenger services. It is, nevertheless, possible to run occasional excursions on some of these branches in connection with isolated events which offer the prospect of a paying trainload, and British Railways will continue to run such excursions where opportunity offers.

Yours faithfully,

J. H. BREBNER,
Chief Public Relations & Publicity Officer

British Transport Commission, 222, Marylebone Road, N.W.1

## Modern Locomotive Practice

March 18

SIR,—I was extremely interested in the editorial article in your March 5 issue. I, too, am surprised that the British Railways standard locomotives have single orifice exhaust arrangements. It was originally stated by British Railways authorities that multiple-jet exhausts were not so efficient at low power outputs as a single jet. However, no figures have been published to substantiate this statement, which seems worth investigation.

Considering a single jet of average diameter, then the bulk of the exhaust steam is in the form of a central core which does nothing but exhaust itself into the atmosphere. Thus the burden of producing a smokebox vacuum falls upon the relatively small amount of steam in the outer annulus of the jet.

To induce a greater vacuum, more air must be moved; in other words, the exhaust steam must do more work on the surrounding gases. As the area in contact does not change, the steam must necessarily move at greater velocity in order to provide the increment in work output. But to propel a given weight of steam at a greater velocity requires more power which can only be obtained from an increased back pressure in the cylinders, which is not at all desirable.

From this it will be apparent that a multiple-jet exhaust system offers a larger proportion of the exhaust steam for draughting purposes as a group of small holes of given total cross sectional area have a greater perimenter than a single hole of equal area. Hence any given mass of steam moving with a given velocity over a given distance will produce more draught if ejected through a number of small jets than through one large jet.

In practice there will be a greater resistance to the passage of steam through the multiple-jet system than through the single jet. This may be counteracted by providing increased crosss-sectional area. Compared with a single jet of any area, a double chimney needs about 20 per cent more cross-sectional area and a 5- or 6-jet system about 40-50 per cent more area, these figures usually giving improved draught with reduced back pressure.

There seems to be no reason why these arguments should not apply to low power outputs as well as the higher powers, as it is only a matter of proportioning the front end to suit the requirements.

Yours faithfully,

A. E. DURRANT

"Redville," High Street, Swindon

## French Railways Speed Record

March 13

SIR,—In your comment on the letter from Mr. A. J. Beedham under this title in your issue of March 12, you state that the policy of the British Transport Commission is a high general level of passenger train speeds, not a few ultra-high speed trains.

Am I correct in assuming you wish to imply by this that although, for instance, all express passenger trains cover the 318 miles between Paris and Lyons at an average speed of over 60 m.p.h., including stops at Laroche and Dijon, compared with the average of 76 m.p.h. for the crack trains, the policy of the French National Railways is not to achieve a high general level of passenger train speeds?

With regard to the so-called high general level of British passenger train speeds, I would be very glad not to see it so often broken owing to lack of punctuality.

Yours faithfully,

T. O. B. BUSSELL

40, Hathaway Gardens, West Ealing, London, W.13

[Conditions on the Paris-Lyons and other electrified main lines of the French National Railways differ materially from those in this country. Apart from electrification, traffic in France, generally speaking, is less dense and nearly all freight stock is fitted with continuous brakes. French Governments since the war have made available for railway rehabilitation and improvement—including electrification, re-signalling, and civil engineering works—much greater sums, comparatively, than have been allowed to be spent on British Railways. For these reasons the general level of speeds on French electrified main lines is bound to be higher than on steam-worked main lines in Britain, where in present conditions no good purpose would be served by experimenting with speeds of 150 m.p.h.—ED., *R.G.*]

# THE SCRAP HEAP

### "Bird Thou Never Wert"

The call of the cuckoo will no longer be heard from the platform and rafters of Wakefield Kirkgate Station. For years travellers have been baffled. A councillor told how he had heard the cuckoo in mid-winter. A letter was sent to the local newspaper, and the report went round the world.

But a ticket collector knew better. He is an amateur bird imitator and practical joker. But he has retired—and taken the cuckoo with him.—*From the "News Chronicle."*

### Good by Goods

The vanman from Manchester Victoria thought the Canadian gift parcel he was delivering would bring nothing but pleasure to the recipient, a widow in straitened circumstances. When, however, he brought the parcel there was a regrettable snag, for she could not raise the 7s. 4d. due on delivery. Within a few minutes of his arrival back at Victoria the carter was taking part in a whip-round in the parcels office. The parcel was soon on its way again to the widow, this time to be presented to her free of charge with the compliments of the Victoria parcels staff.—*From "The Manchester Guardian."*

### Model of Kilsby Tunnel Entrance

Robert Stephenson, when resident engineer during the building of the Kilsby Tunnel on the London & Birmingham Railway, erected a scale model of the entrance in the garden of the Manor House (now Cedar Lodge), Kilsby, where he was a guest. The model was forgotten for many years, but discovered recently by Dr. J. Thomas, who came across it when engaged on research work for Leonard Fairclough Limited, the contractors for the new drainage scheme referred to in our issue of October 2, 1953.

By courtesy of Dr. Thomas and of Miss D. Pitton, the present owner of Cedar Lodge, we reproduce below a photograph taken by a member of the staff of Leonard Fairclough Limited, showing Mr. B. E. B. Walker, District Engineer, Northampton, and Dr. Thomas examining the model.

### No Walking Pass

A train from Retford to Worksop is reputed to have left Retford Station on time and stopped 400 yd. further on.

Sixty-three minutes afterwards two young passengers jumped out and started to walk back to Retford Station. They were seen by a railway policeman and charged before Retford magistrates, accused of "unlawfully leaving a train between stations."

The Chairman gave them an absolute discharge, adding: "You cannot keep passengers in a train for an indefinite and unpredictable length of time."

### A Tyneside Jubilee

In 1902 the Tyneside Tramways were opened from Gosforth to North Shields, taking away a good deal of railway short-distance traffic. The management of the North Eastern Railway promptly put in hand a scheme to electrify the suburban lines and the section between New Bridge Street, Newcastle, and Beaton opened on March 29, 1904. The full circuit between Central and New Bridge Street Stations, Newcastle, via Tynemouth, was opened on July 1.

Some fast trains were introduced on July 25 between Newcastle and Tynemouth. This date was the ninetieth anniversary of the trial run of Stephenson's first locomotive on the Killingworth wagon-way, which the electric trains crossed near Benton Square. In a letter to *The Times* in 1804, Mr. G. C. Warden wrote that Stephenson had some pre-vision of the importance of electric traction. The engineer, a year before his death, expressed to Mr. Warden, who was at the time a young manufacturer in Newcastle, the opinion that electricity would become the great motive-power of the world.

### Got Them Beet

At a meeting of the Bridlington branch of the National Farmers' Union, a delegate to the County Executive appealed to farmers not to overload vehicles carrying sugar beet, as many tons had fallen locally from farmers' wagons at village sidings or railway trucks in shunting, amounting to the equivalent of the produce of about four acres, and was sold to a sugar beet factory for over £250. The minimum price is £5 14s. a ton. The money goes to British Railways, which bear the cost of sweeping up and collecting the fallen beet.

### Some Day

*(A Flight of Fancy)*

Some day, in some new incarnation,
Untrammelled by mere gravitation,
At last pigs may fly and, across the night sky.
Blue moons move in stately rotation.

Some day, when the boffins unravel
The problems of planetary travel,
Some Crosby may croon to the Man in the Moon,
With no wisecracking guy there to cavil.

Some day, maybe, mankind's devotion
To glamorous steam locomotion
Will go up in smoke if some whiskery bloke
Finds the flashpoint of diesel emotion.

And what of the motives and manners
And methods peculiar to planners?
Some day *I* may yearn, like these experts, to learn
The alternative uses of spanners!

Having swallowed, with small delectation,
Transport's latest and greatest creation,
I may even adore, when I've studied them more,
The virtues of unification.

All this is, of course, without malice
And, more or less, *cum grano salis;*
It *may* become true, but I fancy (don't you?)
It all rather savours of "Alice"!

A. B.

*Photo] [Lawrence Moore*

*Mr. B. E. B. Walker (left) and Dr. J. Thomas examining model of Kilsby Tunnel in the garden of the house at Kilsby where Robert Stephenson stayed when resident engineer*

# OVERSEAS RAILWAY AFFAIRS

*(From our correspondents)*

## NIGERIA

### Diesel-Electric Locomotives

The ten 750-h.p. diesel-electric locomotives on order from the English Electric Co. Ltd. are similar in design to those on order for the Gold Coast Railway. They have two four-wheel bogies, with each axle motored. The driving compartment is at one end only, but provides for two driving positions enabling the locomotive to be driven in either direction without the necessity for turning.

The locomotives are to be used on the Zaria-Kano and Zaria-Kaura sections, where serious water shortages are experienced annually. They cannot unfortunately be used on the Kano-Nguru line as this section is laid with 45 lb. rail which is unsuitable for an axle load of 13½ tons. They will also run on the Zaria-Minna section of the main line.

In the past many locomotives were required during the dry season to haul water tank wagons over these sections and all trains were required to convey auxiliary water tank wagons behind the engine. With a groundnut crop estimated at about 500,000 tons now coming in to the stacking areas in the north, the diesel locomotives will be kept fully occupied. It is expected that they will be able to perform two round trips a day between Zaria and Kano, 330 miles. They are fitted with 400-gal. fuel tanks which gives them a range of approximately 400 miles, sufficient to enable them to refuel only at their home depot (Zaria), where a new diesel workshop and running shed is to be constructed.

### Domestic Statistics Booklet

The railway has introduced a booklet of domestic statistics which is distributed to all supervisory officers. As many of the tables are new for the railway, comparison with previous years is not yet possible. Each table has been selected with care to illustrate a particular aspect or function. The figures not only indicate the efficiency of the different services as a whole, but also give comparisons between the three districts and between the 3 ft. 6 in. gauge and the 2 ft. 6 in. gauge lines.

It is hoped that by this means the District Officers and their assistants will be able to detect weaknesses in operation in their districts and that this will result in an all-round increase in efficiency. An examination of the tables indicates that in certain respects there has been a substantial improvement in the general operating efficiency of the line since 1951-52, particularly under the heading "Average Net Freight Train Load Including Proportion of Mixed," which increased from an average of 184 tons in 1951-52 to 222 tons in September and October, 1953, on the 3 ft. 6 in. gauge. "Engines under Repair in Sheds" also shows a satisfactory drop from 38·1 in 1951-52 to 27·6 in October last. It is remarkable to note in this connection that although the number of engines in stock today is 19·5 less than in 1951-52, the number in use has increased from 99·6 to 111·5. This has been achieved in spite of a serious shortage of qualified locomotive engineers.

The monthly averages of "Gross Trailing Ton Miles" for 1951-52 and 1952-53 were 140,435,000 and 162,779,000 respectively; last October the figure had risen to 191,673,000. The average "Monthly Tonnage of Goods Carried" in 1951-52 and 1952-53 was 146,000 and 174,000 respectively; the average for 1953-54 to date is 183,000. The "Net Ton Miles Per Freight Train Engine Hour" figure also shows a satisfactory increase since 1951-52.

## INDIA

### Kumbh Bathing Festival

The Minister for Railways & Transport, Mr. Lal Bahadur Shastri, stated on February 9 that all Indian railway resources had to be pooled to make arrangements for the Kumbh festival. Arrangements for this festival were described in an article on page 180 of our issue of February 12.

The number of special trains which was run inwards to the Allahabad area was 374 and, up to February 6, 344 outwards specials had been provided. There were also 510 shuttle trains within the fair area to cater for local movements of pilgrims. The festival was marred by a stampede in which 400 persons were killed and 1,000 injured. The railways immediately ceased to run trains to the area but were able to resume traffic after a few hours. Allahabad Junction and other stations were tightly packed with outgoing passengers for some 48 hours. By March 3 most of the staff, who had been collected from all over the Northern Railway, had dispersed and the special festival organisation closed down on March 15.

## NEW ZEALAND

### Evidence Before Tangiwai Inquiry

The Railways Department could not design all bridges to withstand the effects of all possible volcanic disturbances, Mr. H. C. Lusty, General Manager, told the board inquiring into the Tangiwai disaster on Christmas Eve. If anyone could say what volcanic activity should be guarded against in any instance, he had no doubt that the department could do it. Mr. Lusty was answering questions about the design of the proposed permanent bridge across the Whangaehu River at Tangiwai.

Mr. Lusty said that the Public Works Department had prepared the plans for and built the original bridge about 1906. At that time the Public Works Department did all the surveying and preparatory work and the construction of new lines and bridges and then handed them over to the Railways Department. Now his department did much of the preliminary work itself and co-operated with the Ministry of Works in all phases. His technical officers, he said, would give evidence on the result of their investigations into the reasons for the failure of the bridge. They were now considering the form the new permanent structure should take and whether it was practical to install a flood warning device.

Asked what steps would be taken to prevent a similar accident again, Mr. Lusty said his department's investigations were not yet completed. He was expecting a report from the Geological Survey Branch of the Department of Scientific Research on the possibility of a recurrence of the flood and the scale on which it might be expected. A permanent bridge with a margin of safety would be designed to withstand a possible future flood onslaught. It was already apparent that the new bridge would have to be longer than the old one; the length of span was still being considered.

## CANADA

### Equalisation of Freight Rates

The Board of Transport Commissioners will begin early in May to hold hearings in different parts of the country on the equalisation of freight rates on particular commodities. They will probably open at Vancouver on May 3. After that, there will be sessions at Winnipeg and some places in the East.

### Taxation of C.P.R. Property

After four years of negotiations, the city of Calgary has reached agreement with the Canadian Pacific Railway on taxation of railway property. Civic revenue from the agreement is expected to amount to more than $70,000 a year. It will include a $75-a-year grant for each revenue-producing room in the Palliser Hotel of the C.P.R., continuation of an annual payment between $10,00 and $15,000 on the Alberta Stockyards (a C.P.R. subsidiary), and a cash payment in 1954 of some $22,000 as the railway's share of construction of a road fronted by railway property.

## UNITED STATES

### Six New Movable Bridges in Cleveland

An $18·8 million bridge-replacement programme is now in hand on the Cuyahoga River in Cleveland, Ohio. It is being undertaken under joint agreements between the U.S. Corps of Engineers and four railway companies, and nearly 30 per cent of the work is now finished. Already two of the six movable railway

bridges involved have been completed. Both are single-line structures of the vertical-lift type and have spans of 234 ft. and 260 ft.; the railways concerned are the N.Y.C. & St. L., and the N.Y.C., respectively.

Of the remaining four bridges, one for the B. & O. RR. is a single-track trunnion bascule 255-ft. span, and the other three are of the vertical-lift type, namely, a 217-ft. single-track span for the N.Y.C. RR., a 265-ft. double-line bridge for the N.Y.C. and P.R.R. companies, and a 267-ft. double-track structure for the N.Y.C. & St. L. system. All four are expected to be completed in 1956, one in June and three in December of that year.

### Another New Iron Ore Railway

The Reserve Mining Company is constructing a 47-mile line of railway from its mine and preliminary crushing plant at Babbitt to its processing plant on the shore of Lake Superior near Beaver Bay. By the end of 1953 some 30 miles of the line were completed. The railway is being built to carry up to 10,000,000 tons of crude taconite concentrates, containing 60 per cent iron, annually.

## ARGENTINA

### Southern Transandine Railway

The Argentine-Chilean committee which is studying the possibility of accelerating work on the Southern Transandine line from Curacautin (Chile) to Zapala (Argentina), under construction since 1911, has issued a communique summarising the situation at the moment. Some 280 km. of track have still to be laid, approximately half on the Chilean side and half on the Argentine side; 40 km. between Curacautin and Boca Norte are ready for service, including the Las Raíces tunnel, 4,526 m. long, which was completed in 1938 at a cost of 30,000,000 pesos. Normally another three years would be required to finish the work, but President Ibañez of Chile will shortly present a bill to the Chilean Congress authorising the expenditure of special funds to complete the line as soon as possible. When completed, the new line will carry Chilean coal, steel and wood to Argentina, and Argentine cereals, livestock and petroleum to Chile.

## BELGIUM

### Modernisation Programme

In a recent address at Liége, Monsieur J. Boucíqué of the National Railways surveyed the modernisation programme of the railways which calls for an expenditure of fr.5,000 million in the next three years.

Outstanding developments are the continuation of work on the Brussels Junction Railway which knits more closely the lines of the north and south, and the continuation of the 3,000 volt d.c. electrification programme with the aim of electrifying a total of 1,500 km., carrying 70 per cent of the total traffic. Electrification has been extended to Ghent and will be complete from Brussels to the coast by July. Louvain will be reached at the end of this year, Liége in 1955, and Arlon, on the Luxembourg border, in 1956. Diesel-electric traction will be introduced on a number of branch lines.

Civil engineering works during the first years after the war were concentrated mainly on the reconstruction of the 325 bridges which had been destroyed. Temporary structures were gradually replaced by new permanent structures. Preference has been given, where possible, to stone viaducts and for smaller bridges, reinforced concrete. In many bridges of less than 20 m. span, steel girders encased in concrete have been used. Prestressed concrete has been used for many overbridges.

Thirty station buildings destroyed had to be reconstructed. There was wholesale destruction of goods sheds and locomotive depots. In rebuilding of sheds, their number has been, or is being, drastically reduced; new sheds are normally constructed in reinforced concrete. Similarly, the number of marshalling yards has been reduced from 34 to 26, but the remaining yards have been remodelled to cater for up to 200 wagons an hour.

The 54 m. rail has now become standard. Rails of up to 800 m. have already been laid experimentally on the Brussels-Mons line, and similar trials will be carried out this year on the Brussels-Liége line. In connection with this development, the reinforced concrete sleeper has come into its own again, particularly in prestressed form.

## Publications Received

*International Conventions Concerning the Carriage of Goods by Rail and of Passengers and Luggage by Rail.* (Cmd. 9094.) London: H.M. Stationery Office. Price 2d.—H.M. Stationery Office has published as a Command Paper the texts of the International Railway Conventions which were signed at Berne on behalf of the United Kingdom in 1952, and now await ratification by the Government.

*La Locomotive Actuelle à Vapeur.* By Emile Devernay. Paris: Dunod, 92, Rue Bonaparte. 9½ in. × 6 in. 487 pp. 443 illus. Paper covers. Fr. 2,600.—This French counterpart of "Locomotive Management from Cleaning to Driving" is written essentially for engine crews, shed and shops staff. It shows clearly the difference between French and British driving and drivers. The French driver is trained from the beginning to regard his work as a science, and given the tools which make his work scientific; the British grows into his work, treating it as an art, and is given the tools with which the artist produces classic results. The details of steam locomotive operation and construction, to which the book is confined, are covered in 22 chapters, each fully illustrated, and generally with exceptional clarity. Everything is referred to French practice. Thus the book has a value to non-French students in describing the astonishing performances put up by French compounds during the last two decades, for it has clear illustrations and descriptions of such details as the Cossart gear, Willoteaux piston valve, Houlet superheater element, and Kylchap exhaust which have helped the excellent designs and characteristics. These chapters are supplemented by one on postwar French locomotives, and then by what is the only weak link in the book, a chapter on non-French steam locomotives in which nothing is said of the all-welded boilers and very notable new standard locomotives in Germany, and no mention made of any British Railways standard class. Instead, there is concentration on American types, a curious twist when one considers the practical elimination of the steam locomotive for new construction during the last four or five years in the U.S.A.

*Grading of Clerical Work.* London: Office Management Association, 8, Hill Street, W.1. 10 in. × 6 in. 88 pp. Price 21s.—This booklet aims at giving an office manager a practical means of assessing the calibre of clerk he needs for various tasks. It provides detailed specifications for many clerical jobs, covering all the more usual procedures such as cash control, payroll, certification of bought invoices and bought ledgers, sales invoices, typing, and shorthand. Each of 15 such procedures is analysed under a large variety of possible tasks, and shows the calibre of clerk required for each by assigning to it one of the six job grades which the Office Management Association have used since 1942 as the basis for job grading. There is a chapter on how an office manager may assign a merit rating to clerks according to the varying degree of skill and experience with which work is done in a grade. Another chapter explains in detail how the management can introduce a job grading and merit rating scheme into an office for the first time and how salary scales can be devised.

*Holidays in Sweden.*—A folder, "Sweden," issued jointly by the Swedish Lloyd Steamship Company and the Swedish State Railways, is illustrated in colour and suggests many attractive ways of spending a holiday in Sweden, including "Sunlit Nights" land cruises by train to the Arctic Circle. During the summer of this year there will be from two to four sailings a week each way between Tilbury and Gothenburg. The special high-speed train, the "Londonpilen" ("London Arrow") runs between Gothenburg and Stockholm in connection with the steamers.

XUM

*Sixteenth International Railway Congress*

# Geographical and Functional Organisation

*Simplification of railway administration*

REPLIES from British Railways, five railway administrations in the U.S.A., the Danish State Railways, East African Railways & Harbours, the Egyptian, Finnish, and Indonesian State Railways, London Transport, the Norwegian State, Rhodesian, and Swedish State Railways, were received to Question 8 for consideration at the forthcoming International Railway Congress in London. This question deals with the determination of the principles of geographical and functional organisation of a railway system and simplification and retrenchment in administration. The replies were collated by Mr. Bengt Adamson, Superintendent, Swedish State Railways.

The great variety of activities in a modern railway system, its geographically widespread nature and need for adaptability to varying traffic conditions, involve many special problems and difficulties by comparison with other organisations. No two railways have followed exactly the same lines of development. British Railways emphasised that material changes might result from the Transport Bill which was before Parliament at the time when the answer to the question was submitted.

Ultimate control is exercised by a board of directors elected by stockholders on privately owned railways, but on State-owned railways four methods are to be found in use. Control may be exercised directly by a ministerial department, or by a ministerial department with a consultative committee. Alternatively, special auditors may be nominated by the Government or a special commission may be set up.

### Administrative Control

The general function at the administrative level is to determine policy, where it falls outside ultimate control, and to exercise administrative control of the organisation. Here again four methods may be distinguished. The highest executive head and certain heads of central departments may form the organ by which policy is laid down, or representatives of state, public, and sometimes staff may be added to form a larger body. The executive head may join representatives of state and public and possibly staff to form an administrative body or a special committee may be appointed. In the first three instances, decisions may be made by the executive head acting alone, usually after consultation with the member to whose sphere the question belongs, or, as with the special committee, decisions may be reached by a majority vote. In some cases there is a grant of absolute authority up to a given limit to general managers.

### Business Direction

Policy is determined centrally as a result of both central and regional observations. Business direction embraces the interpretation and application of policy and is a regional as well as a central function. The central functions are exercised by central departments differing in the position and powers granted to departmental chiefs.

There are two main cases in the first of which the departments act as staff departments to the executive head or body. Orders are issued by or in the name of the executive head although powers may be delegated in given matters to the heads of departments who may be of lower rank than the highest regional chiefs. In the second case the departments are interposed between the executive head and the regional organs and departmental heads are given powers within which they issue orders in their own names. In such cases their rank should be higher than that of the highest regional chiefs.

The first method is employed on the Indonesian State, Norwegian State, Rhodesian, and Swedish State Railways, while the second is practised by those American railways which replied to the question, E.A.R. & H., and the Finnish State Railways. The report also places British Railways in this category. The difference between the two methods of working is smaller than might be thought, since the more power is delegated to heads of departments under the staff system the closer that system approaches to the other.

The regional functions of business direction are exercised by regional officers, often with the assistance of staff officers or staff departments.

Headquarters functions are brought together in such a manner that the number of heads of groups directly subordinated to the executive chief is usually from five to ten. The Swedish State Railways have the large number of 15 groups. In practice the 15 groups can be said to be formed into three working units headed respectively by the General Manager, the Assistant General Manager, who is also head of the operating department, and the Director of Economy.

In America the Atlantic Coast Line, Southern, and Pennsylvania administrations combine engineering and operating functions, while the New York Central combines civil and mechanical engineering. In all non-American systems the engineering and operating functions are separated. Engineering is divided into at least two groups, usually civil and mechanical, and in some cases even more.

At regional levels the report is restricted to the consideration of some fundamental differences in respect of main functions. There are three main combinations of operating and commercial functions. Fares, rates and charges, sales promotion, private sidings, warehouse accommodation, claims, goods depots, booking, parcels, and reservation offices, are commercial functions in the first of these, while train movement, shunting and other external operations at stations, yards, and goods depots, the provision of coaching stock, and distribution of freight stock are operating functions. British Railways are cited in the report as using this division. The second combination, used on the American railways replying, transfers goods depots and booking, parcels, and reservation offices to the operating group.

The third combination, in force on the Danish, Egyptian, Finnish, Indonesian, and Swedish State Railways, and on the East African Railways & Harbours, is of all these functions in one group.

### Operating and Motive Power Functions

There are differences in the combination of operating and motive power functions between American and other practice. The American railways which replied range the provision and manning of locomotives under operating, while their maintenance comes under mechanical engineering. British Railways, the Danish, Finnish and Swedish State railways, and E.A.R. & H. place provision and manning under mechanical engineering, but, when outside the locomotive depots, the crews have to take orders from the operating staff in operating matters. On the Swedish State railways there is an exception in the case of rail-going buses and lighter motive power for shunting, where provision and manning are ranged under operation.

Signal engineering and telecommunications engineering are combined in five different ways. Both functions may be ranged under permanent way, as on the Finnish, Indonesian, and Norwegian State railways, or signal engineering may be broken out from permanent way as a separate function. On the E.A.R. & H. telecommunications engineering is broken out from permanent way and the maintenance and construction is in fact carried out by the East African Posts and Telecommunications Administration. On British Railways, the New York Central, and the Pennsylvania Railroad both signal and tele-

communications engineering are separated from permanent way and are joined together. On the Swedish State railway the functions are separated not only from permanent way but also from each other.

### Geographical Organisation

Railways of small size can be operated as single managerial units but a geographical division of territory is necessary on larger railways in order to confine the managerial units to an appropriate size. Co-ordination is of a departmental type on the Rhodesian and Finnish State railways, and E.A.R. & H., and in these three cases the territorial units come directly under the headquarters. Further examples of departmental organisation are provided by the Egyptian State and New York Central administrations; there are intermediate territorial units interposed between headquarters and the smaller territorial units in these cases. A departmental organisation is favoured by the remaining railways, and generally there are intermediate units in the chain, although on the Norwegian State railways the territorial units are directly under the headquarters and on the Indonesian State railways certain units of the smaller type are directly subordinated. British Railways at the time of the report approached the departmental type of organisation.

There appears to be no clearly pronounced relationship by which a smaller volume of traffic per given length of line results in a larger size of territorial unit.

### Territorial Division

Two principal types of division into the larger territorial units may be distinguished. In the first the territorial division follows the line of the chief arteries, so that, generally, regions radiate in sectors from the city housing the headquarters. In the second the centres of territorial units have been located in places important for railway, mercantile, industrial, or public administrative reasons and round these suitable units have been built up.

The first method is practised by British Railways, except in the Scottish and North Eastern Regions, and the Southern of U.S.A. system also has a combination of the two systems in which the regions follow the arteries but do not radiate from a central point. Headquarters are in Washington, which forms the north-eastern terminus of the system. The second method is found on the Atchison, Topeka & Santa Fe, the Danish, Indonesian, and Swedish State railways, and the Pennsylvania Railroad. In the Danish and Indonesian cases the fact that the railway systems serve different islands makes such a division inevitable.

### Divisional and Departmental Organisation

In order to bring out points of view on the departmental and divisional types of organisation special questions were addressed to the administrations concerned. In view of the lack of definition of the terms and the great variation encountered in practice the questions were worded very generally. British Railways replied that it would be inappropriate to comment on the questions at a time when proposals for re-organisation were before Parliament.

The question of the advantages and disadvantages of an organisation in which all the responsibility falls upon a single officer in a given territorial zone, was answered by the Pennsylvania Railroad in a way which also expresses the views of several other railways. The Pennsylvania considers that, assuming the authority vested in such an officer to be commensurate with the responsibility placed upon him, this form of organisation provides for expeditious and fully co-related decisions from that source.

The disadvantage inherent in this form of organisation is that in theory the officer must be familiar with all details of every subordinate unit, which is not, in practice, possible. However, over-all responsibility is a stimulus to the acquisition of a broader knowledge of the principal functions and activities of the several units.

The Swedish State railways consider it an advantage to customers and public authorities to have regional chiefs with authority over the most important functions, but a disadvantage is that lack of uniformity between different divisional units may arise. Furthermore, certain functions in a divisional organisation might require more echelons and more staff than they would if organised along departmental lines.

The question of the advantages and disadvantages inherent in a departmental organisation was also answered by the Pennsylvania, which considered the advantages to lie in concentration of effort and freedom from interference in any given phase of activity. This is the form of organisation actually existing at the lower levels, except that now individual departmental control extends to executive levels. Consistency lies in following the same general plan at all levels of organisation, but it may be argued that frictions may be induced which must eventually be reconciled by a single, over-all authority.

The Atlantic Coast Line answered that officials of different departments might have varied opinions which would prevent definite conclusions being arrived at on important matters. There might also be lack of uniformity in carrying out higher managerial policies. The Swedish State railways see advantages in an expert being responsible for each function and the possibility of each function or group of functions being given the most appropriate organisation. Disadvantages lie in the inappropriateness of too high a degree of specialisation and the complication of the system from the point of view of the public.

Generally speaking, the development of larger railway systems tends towards divisional organisation although in several cases there is still a greater or lesser degree of departmental control.

The replies were not sufficiently comprehensive to allow any conclusions to be drawn in respect of the normal percentage of administrative staff.

### Simplification and Retrenchment

The answers to this part of the question were, in general, rather brief, but several railways declared that a great deal of attention is paid to the possibilities of improving their organisation. Special organs for the study of rationalisation and simplification of method have been set up by the Finnish, Norwegian, and Swedish State railways and a central psychotechnical laboratory has been instituted by the Finnish State railways.

The Swedish State railways have recently combined, into one central department, two previously separate departments dealing with passenger and freight transportation respectively. A further amalgamation of two departments dealing with passenger and freight commercial matters is also being realised. The Norwegian State railways are discussing an amalgamation of the traffic and operating departments.

A far-reaching re-organisation of the Finnish State railways was proposed by a committee set up in 1947 by the Ministry of Communications. This committee reported in 1949, but its proposals aroused so much opposition, especially from staff interests, that the plan is still in abeyance. A more modest recent suggestion has been that the tasks of the Economy department should be divided between the Tariffs and Administrative departments.

A reduction in the number of territorial units can sometimes be achieved with little increase in staff by increasing the size of the remaining units. This has been done to some extent on the Pennsylvania and the Swedish and Finnish State railways.

Steps to eliminate intermediate echelons have been taken by London Transport, the Pennsylvania, and the Swedish State railways, while such a scheme in relation to workshops is being considered by the Norwegian State railways.

From time to time investigations are made into possible decentralisation which would lead to a reduction of work at higher levels, but no examples are cited in the report. Careful examination of administrative work may also result in simplification and retrenchment quite apart from organisational changes.

After the completion of the main report, additional replies were received from the Indian, Iranian State, and South African railways and also from Coras Iompair Eireann. These were summarised by Mr. Adamson in a supplementary report. In general, the information submitted serves to confirm the conclusions already drawn.

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# The French Railway Speed Record

*Observations during and after the attainment of 150·9 m.p.h. with a test train on February 21*

FOUR days of trial runs at progressively increasing speeds preceded the world rail speed record of 243 km. (150·9 m.) p.h. set up on February 21 by a "7100" class Co-Co electric locomotive of the French National Railways between Dijon and Beaune (as reported in our February 26 issue). These experiments were a stage in the study of the technical and economic aspects of high-speed working which the S.N.C.F. is pursuing, the practical results of which have been seen in the overall raising of average speeds in daily service since the Paris-Lyons electrification was completed.

### Purpose of Tests

The purpose of the recent tests was to investigate the margin of safety allowed by the speeds now regularly scheduled with normal types of locomotives and rolling stock. They were also regarded as a contribution to research into methods of improving the productivity of transport and reducing its cost, by showing how the building of vehicles able to run at ever-increasing maximum speeds can reduce maintenance expenditure on locomotives and track when operating at the speeds now normally scheduled.

To fulfil these conditions, the type of locomotive chosen was one of which 60 are in service on the S.N.C.F., engaged on duties ranging from heavy goods haulage to working the "Mistral" express, which runs the 318·1 miles from Paris to Lyons in 4 hr. 10 min., inclusive of a 3-min. stop at Dijon, and often loads to 689 tons. On the day locomotive No. 7121 was selected, it had, in fact, been hauling a goods train of 1,476 tons. It undertook the high-speed tests between Dijon and Beaune without undergoing modifications of any kind.

The test train consisted of three coaches of a recent design which had run 24,855 miles since being placed in traffic. The locomotive had been in service since November 1, 1953, and had run about 49,700 miles. Weight of the train was 109¼ tons, and of the locomotive 105¼ tons.

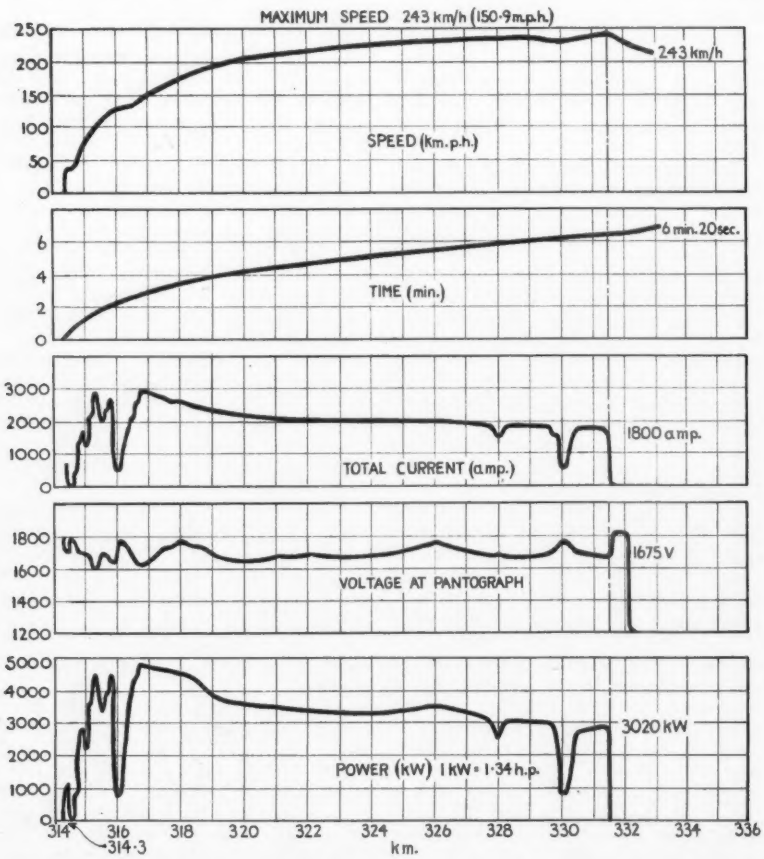
On February 21, the day of the record, acceleration out of Dijon (km. 314·3) was extremely rapid, and km. 317 was passed at 93¼ m.p.h. Maximum power input at the pantograph during the run was 4,860 kW. (3,000 A. at 1,620 V.), and at the peak speed it was still 3,020 kW. (1 kW. = 1·34 h.p.). The record was achieved between Gevrey-Chambertin and Vougeot, where for 3·1 miles speed averaged 149 m.p.h. and rose to the maximum of 150·9 m.p.h. Between these stations the line is level for nearly a mile and then falls at 1 in 714.

Continuous records were made on all the runs by means of piezo-electric apparatus of the lateral forces exerted on the track by the first and third axles of the locomotive bogies. It was found that these did not exceed 4·2 tons, whereas the figure accepted by the Permanent Way Department as the limit beyond which distortion of the track takes place is 6·85 tons. Transverse accelerations measured in the coaches were of the order of 0·06 to 0·1 g., or very similar to those experienced at 87 m.p.h.

### Electrical Performance

The behaviour of the traction motors in the particularly severe conditions imposed by these trials was noteworthy. At their conclusion the brushes were sound and the commutators showed no sign of the exceptional mechanical and electrical stresses they had undergone. At 150·9 m.p.h., 14,500 commutator segments a second passed under each brush set, representing 520,000 current reversals a second in the six motors of the locomotive. The standard pantographs proved equally satisfactory. These observations were made after three successive days of record-breaking runs, the maxima on the preceding Friday and Saturday, February 19 and 20, having been 138 m.p.h. and 143 m.p.h. respectively.

For the trials, the line voltage averaged 1,650-1,700 V. (normal voltage 1,500 V.), but no changes were made in the locomotive gear ratio. During inspection and adjustment before the high-speed runs, special attention was given to factors affecting performance of the motors when running with minimum field.




*Speed and performance diagrams of French National Railways record run*

ALEXANDRA PALACE LINE TO CLOSE.—The Transport Users' Consultative Committee for London has decided that the passenger service on the Alexandra Palace-Finsbury Park line is no longer justified. The line will be closed and electrification, estimated to cost £2,000,000 dropped. The decision follows consideration of objections against the closure made at a meeting of the committee last month by Middlesex County Council, Alexandra Park trustees, borough councils, and trade and residents' associations. At the meeting the British Transport Commission said that it cost £3 10s. to earn £1 in fares.

# Information for Passengers at Stations

*Display fitments and sign for use in London Midland Region*

*Double-sided timetable fitment of lightweight tubular steel*

FOUR new information display fitments and a sign, for employment at various stations in the London Midland Region of British Railways, have been introduced; they were designed by the Public Relations & Publicity Officer.

The double-sided type "PQ" portable pedestal board is designed primarily to display important train service posters or chalked announcements in large ticket halls or concourses. It is 8 ft. high overall and the framework is of tubular steel welded to a heavy metal base which, however, is equipped with a pair of castors so that the fitment can be easily moved about by one man.

Two separate double-sided light weight boards are embodied, and these can be removed in an instant simply by lifting them out of the trough-shaped base. Each board has a plain chalkable surface of double royal size on one side and a similar surface headed "Please queue here for" on the other. Thus two messages may be stored apart from those actually on display.

The prototype was manufactured by Mead McLean & Co. Ltd.

The type "PS" portable pedestal board is designed for display only in small ticket halls or in spaces too restricted for the use of the "PQ" board. It consists of a small tubular steel stand of simple but robust construction with welded feet added for increased stability. It can easily be carried and occupies little storage space when not in use. The board displaying a double royal poster or chalked notice is of the standard headed type and is simply slotted into the fitment.

The prototype stand was manufactured by Partington Advertising Co. Ltd.

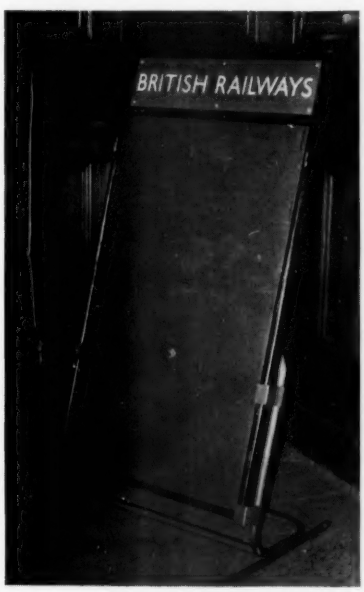
### Tubular Timetable Fitment

Where wall space for display purposes is lacking but suitable floor space is available, a special double-sided fitment has been evolved for the exhibition of timetables.

Construction is of lightweight tubular steel forming a skeleton to which is clipped a series of light metal sheets made up of double royal and quad royal capacity according to need. The timetable posters are then pasted to the sheets and protection from the effect of roving fingers is provided by varnishing with Vitrelex solution.

Wherever possible the fitment is se-

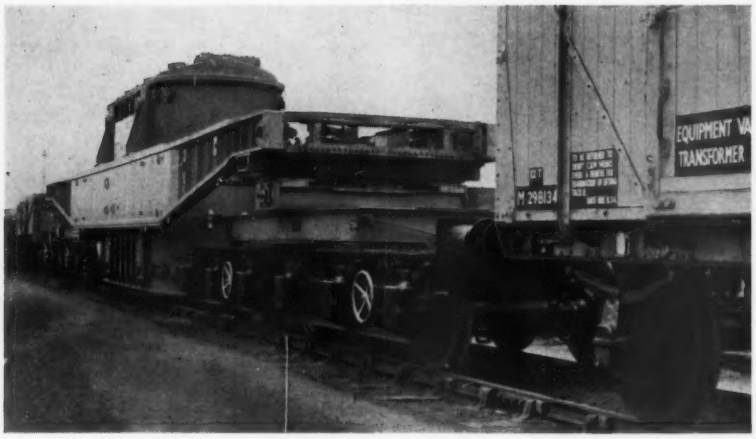
(*Continued on page* 354)



*(Left) Portable pedestal board, type "PS," for small booking halls and confined spac es; (centre) double-sided "PQ" pedestal board with two removable lightweight boards; (right) board fitted into angle-iron frame hanging from coach roof gutter ing, for use where two trains stand at one platform*

# British Railways Transformer Wagons

*Traversing mechanism for clearing obstructions*




*Loaded wagon showing removable side beams and traversing mechanism*

BRITISH RAILWAYS have recently taken delivery of two transformer carrying wagons which are capable of carrying loads up to 135 tons; they were built by Head, Wrightson & Co. Ltd. at Thornaby-on-Tees to the designs of British Railways. With a tare weight of 72 tons 11 cwt. the wagons are 91 ft. 1 in. over buffers and have a clear loading space of 31 ft. length and from 6 ft. 11 in. to 9 ft. width between the side beams on which the load is supported; loads much in excess of 9 ft. width can be carried above the side beams.

### Side Traversing

An interesting feature in the design of the vehicle is the provision of side traversing mechanism which gives a maximum cross-traverse of 1 ft. on either side of the centre-line to clear obstructions such as signal posts, when the load carried is wider than the loading gauge. To facilitate loading the side beams are removable. The end frames which carry the traversing mechanism and support the load are carried on pivots on intermediate frames which in turn pivot on the bogies. A square shaft at the end of the lower assembly operates the mechanism for traversing the complete assembly of main beams and load.

A shaft in the centre of the upper part operates the mechanism which varies the distance between the main beams. The beams rest on platforms at the ends of the assembly. Studs at the top help to retain the slide portion in the desired position.

In the builders' works the bogie was subjected to a test load of 180 tons.

Both wagons have recently been placed in service, the first conveying a transformer weighing 119 tons from the British Thomson-Houston Co. Ltd. Rugby works to the British Electricity Authority, Staythorpe, while the second conveyed a 105-ton transformer from Newcastle-on-Tyne to Keadby.

The vehicle has four, six-wheel bogies with wheel diameter of 3 ft. while the axle journals are 12 in. long by 7¼ in. diameter. The height from the rail to the top of beam, unloaded and loaded, is 7 ft. 11½ in. and 7 ft. 9½ in. respectively. The wagon will negotiate a minimum curve of 1½ chains radius. Hand brakes are fitted.

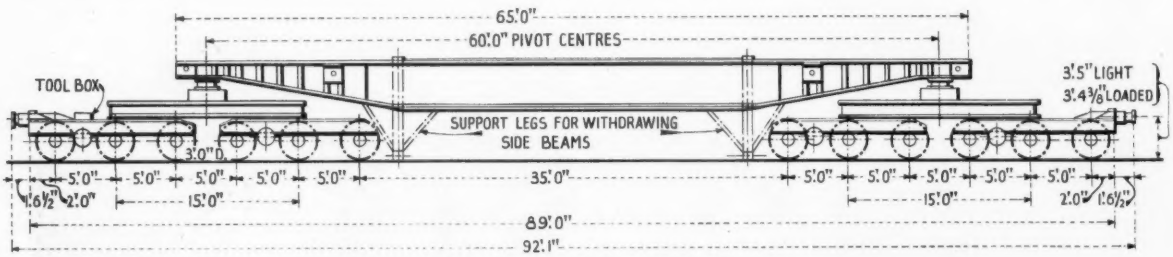



*Diagram showing principal dimensions of the wagon*

### Information for Passengers at Stations

(*Concluded from page* 353)

cured rigidly by being embedded in a shallow built-up concrete platform which helps to prevent accidental damage by luggage barrows.

Prototypes have already been fixed at Coventry (shown in the illustration) and at Birmingham New Street, and were manufactured by Mills Bros. (Sheffield) Ltd.

### Handbill Rack

A special handbill rack for display in new or modernised ticket and enquiry offices has been evolved. Finned vertical ribs have been used to good effect to divide the fitment vertically into a series of four compartments for easy viewing so that the eye is not bewildered by too many different handbills at the same time. The series can be varied to suit individual needs.

Besides limiting the field of view the ribs are deep enough to allow the back of each compartment to be sloped so that the handbills will not fall forward over the easily removable protective plate glass shield. Construction may be in any type of hardwood to harmonise with the particular surroundings.

The prototype was manufactured by Partington Advertising Co. Ltd.

### End of Front Train Sign

This was devised for use at stations where two trains stand together for a while at the same platform.

The board is double-sided, of normal wood construction, and is fitted into an angle-iron frame which hangs from the coach roof guttering, with the lower end stabilised by a wood block, felt covered for protection of the coachwork.

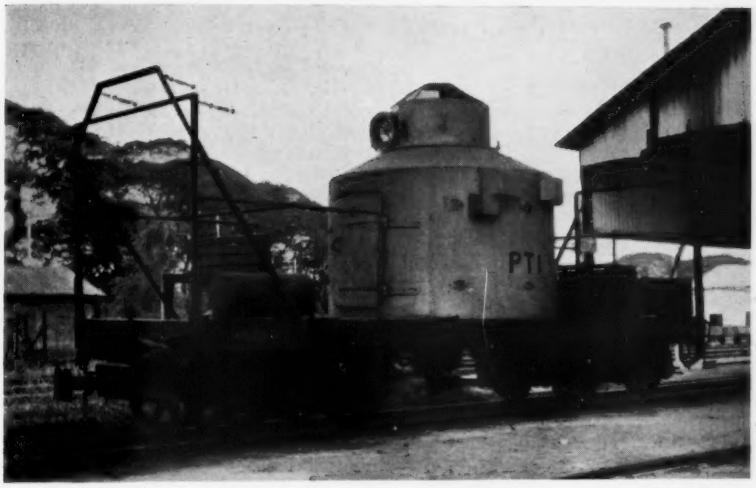
The prototype was manufactured by Harris Sheldon & Co. Ltd.

BRITISH RAILWAYS HEAVY IRON ORE TRAFFIC.—British Railways carried 347,300 tons of iron ore during the week ended March 13, the heaviest forwarding for six months. In the same week 227,542 tons of iron and steel were conveyed from the principal steelworks. During the week ended 6 a.m. on March 22, 3,285,970 tons of deep-mine and opencast coal were carried. The weekend figure was 395,610 tons.

# Train Auto Alarm System in Malaya

*Report on experimental work recently completed*

*By J. P. Cunliffe, M.I.R.S.E., Engineer (Signal & Telegraph), Malayan Railway*




*Armoured vehicle conveying transmitter; the aerials and aerial structure are clearly shown*

DURING the early stages of the emergency in Malaya, sabotage incidents, after dark, resulted in heavy damage to engines and rolling stock and did interruption to services. To eliminate these hazards, a system of pilot trains was adopted. These ran in front of the night mail trains on a time-interval basis; they were composed of two bogie flat wagons suitably weighted, followed by the locomotive, coupled behind which was an armoured fighting vehicle. Powerful electric headlights on the pilot and mail trains facilitated location, especially on straight sections.

A system of communication between the pilot and the mail train was also adopted, dependent on manual manipulation. It was accordingly decided to experiment with an automatic warning system.

This took the form of a small colour-light unit, located in the cab of the engine on the mail train, giving a red or a green lamp indication. The information conveyed to the driver was that a red light indicated pilot train stopped, and a green light, pilot train moving. If the pilot train stopped, the mail train driver immediately received an automatic warning, which would enable him to stop his train short of any obstruction on the line.

This warning was also repeated in the leading brake van, and could be used for the information of military or police as necessary. If it happened that the pilot train stopped intentionally, e.g., at a main station, the driver of the pilot train could, by means of a cancel unit in his cab, maintain the green light on the mail train, so that no unnecessary delay would be incurred by the latter. This system was not connected in any way with normal signalling used on the Malayan Railway.

### Apparatus Used

The installation was carried out by means of a radio link, and consisted of a Redifon transmitter, type G47B and receiver R55. The transmitter and associated relay apparatus was installed in timber housing with expanded metal front in the turret of the armoured vehicle on the pilot train.

The power supply for this, 24 V., was obtained from a battery in the same vehicle, charged each time the vehicle was in motion, and additionally a 2-V. generator also was belt-coupled to a pulley on the axle of this vehicle.

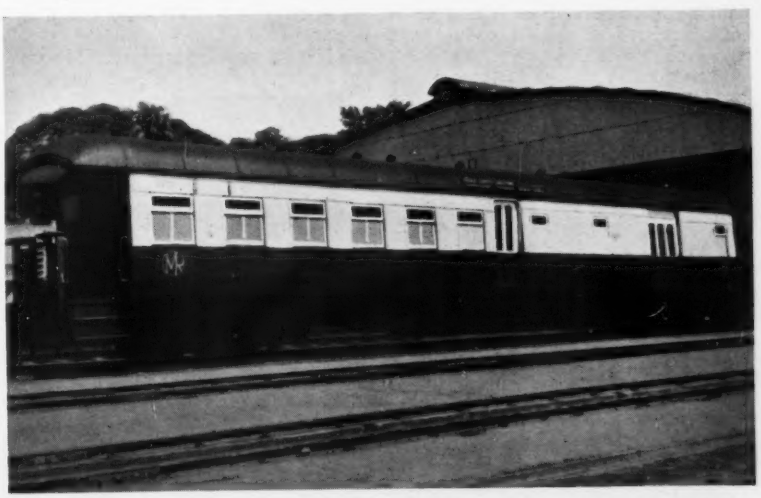
The receiver and associated relay apparatus was installed in a timber housing in a third class composite brake van. The power supply for the receiver, also 24 V., was obtained from the normal train lighting system. Provision, however, was made for space for external batteries below the transmitter and receiver boxes, should these prove necessary. The third class brake van, containing the receiver equipment, was always marshalled at the front of the train as near as possible to the locomotive.

Aerials were mounted externally on the two vehicles concerned: on the armoured vehicle on a special framework, and on the brake van, on the roof by suitable brackets.

Besides the radio equipment, certain attachments were required. These consisted of a plunger unit, containing a plunger (push button) and a red lamp, with a three-core cable to extend to the engine of the pilot train from the armoured vehicle coupled behind it; also for the mail train a lamp unit containing small red and green aspects with a three-core cable of sufficient length to extend from the brake van containing the receiver apparatus to the locomotive of the mail train, and to allow, if necessary, for one or two intervening luggage vans as required. All cables were connected to vehicles by three-pin plugs and sockets.

### Working of Apparatus

In the pilot train, on the operation of the main switch in the armoured vehicle, the red lamp in the plunger



*Third class composite brake van conveying receiver, showing aerial and brackets mounted on roof*

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unit is illuminated. As the pilot train begins to move and reaches a speed of some 4-5 m.p.h., a relay obtains voltage from the special generator, and in consequence the transmitter tone is switched on, and at the same time the red light in the plunger unit is extinguished. This feature is to tell the driver of the pilot that a signal is being transmitted to the following train.

The signal is picked up in the receiver unit, and causes a further relay to change the illumination in the light unit on the footplate of the mail train locomotive from red to green.

When the pilot train halts for any reason, the voltage operating relay ceases, and the red lamp of the plunger unit lights, indicating that the tone has been switched off. This in turn will bring the receiver relay to normal, changing the aspect in the light unit on the locomotive of the following train from green to red.

When the halt (by the pilot train) is a normal one, as at a main station, the driver of the pilot can press the plunger on the plunger unit, and this will maintain the transmitter tone, and consequently the green light aspect on the mail train will continue to be exhibited. The red light on the plunger unit will be extinguished when either the plunger is operated or when the pilot train commences to run (over 4-5 m.p.h.).

In the mail train, red and green lamps are installed on the relay unit of the receiver located in the brake van, and duplicated in a lamp unit which is placed in the locomotive cab. When the main switch in the brake van is switched on, the red lamp in the relay unit (and also on that in the engine cab) is illuminated, and will indicate that no signal is being received. Whilst the pilot train remains stationary the red aspects remain illuminated, but when the pilot commences to move, they change to green, indicating that the pilot train is travelling normally. As soon as the pilot train slows and stops, the transmitter tone is automatically switched off, and this changes the green light to red in the unit in the cab of the mail train locomotive and in the brake van.

### Transmitter

The power output of the Redifon type G47B transmitter is normally 75 W. over the medium frequency band of 365 to 525 Kc/s. on modulated continuous-wave telegraphy. The set uses 570-804 metres valve modulation, and MCW is at a modulation depth of 80 per cent. The chassis is fitted with anti-vibration and shock mounts, and all parts where applicable are treated for tropical use.

Keying, which permits speeds up to 40 m.p.h. with break through, was available, and this was useful during the testing periods for a communication channel between the two trains operators who were able to compare notes as regards events whilst in transit. Principal dimensions and weight are:—

| | |
|---|---|
| Height | 2 ft. 8 in. |
| Width | 1 ft. 11 in. |
| Depth | 1 ft. 7 in. |
| Weight | 122 lb. (approx.) |

### Receiver

The Redifon type R55 set is a superheterodyne receiver for various uses, such as radio telephone or a general communications receiver. All parts, where applicable, were supplied in tropical finish. The loudspeaker was also supplied built into the receiving housing, and headphones were available so that they could be plugged in for use of the technical staff when testing. The plugging of all the headphones automatically disconnects the loud speaker.

Principal dimensions and weight are:—

| | |
|---|---|
| Height | 8¾ in. |
| Width | 19 in. |
| Depth | 12 in. |
| Weight | 21½ lb. |

Besides the radio apparatus, a special relay unit was manufactured locally, and consisted essentially of three relays of the Post Office type.

This unit, located with the transmitter apparatus, controls the light unit in the pilot engine cab, ,and also switches the transmitter tone on and off according to speed, or operation of the plunger in the pilot engine cab.

Tests have consisted in the first place of the transmitter being moved with a normal service train on a branch line, and the receiver remaining stationary in a siding approximately equidistant between the two terminal stations. The branch line concerned may be said to be typical.

After a number of adjustments, it can be said that the apparatus functioned satisfactorily. Reliable communications could be obtained up to a distance of seven miles separating the trains on which the transmitter and receiver were carried, but beyond this distance signals were not reliable. Tests on the main line showed that if all the ancillary apparatus was in order, the signalling functioned perfectly. There are, however, so many variable features that the apparatus cannot yet be wholly relied upon for security purposes and regular working; and research work is necessary.

Some intermittent changes in signals were caused by interference from topographical features. This tends to reduce confidence in the apparatus on the part of train crews. Such

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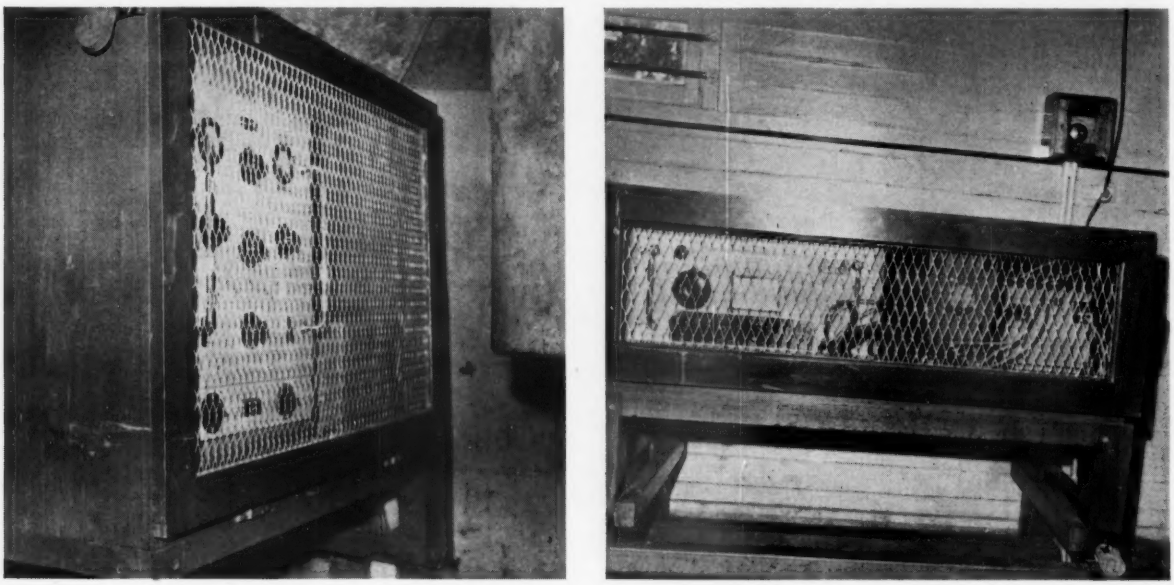
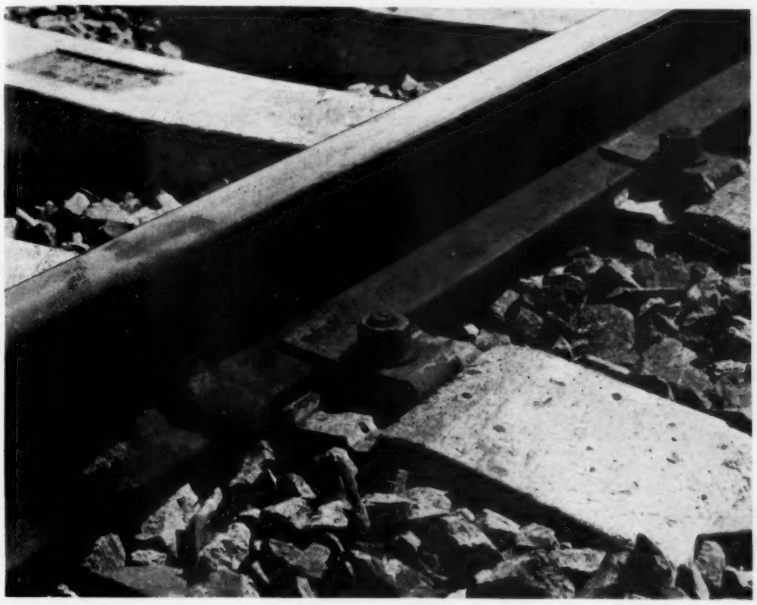


*Transmitter (left) in timber housing; (right) receiver, showing main switch and aerial lead*

# Doubly-Flexible Rail-to-Sleeper Fastenings

*Five years' experience on the French National Railways of the grooved rubber solepad and spring clip*



*Fixture in use with concrete sleepers, showing rubber solepad and clip*

FOR some time French National Railways engineers under Monsieur Robert Lévi, Directeur des Installations Fixes, have been carrying out extensive tests in connection with the improvement of the pre-stressed concrete sleepers, including investigations to find suitable fittings for securing the rail to it.

In collaboration with the French Rubber Institute an effective grooved rubber pad or soleplate was first designed to protect the concrete from shattering under impact from the rail vibrating under heavy traffic.

It was then found that a rigid fastening, such as the normal holding-down bolt, allowed considerable play whilst the rubber solepad was under compression, followed by violent impact on the underside of the nut when the rail was released from a rolling load and forced up by resiliency of the rubber.

The problem was to provide a sturdy yet flexible attachment which, by being permanently under stress, would keep rail, solepad and sleeper tightly together and yet absorb vertical impact. Its solution took the form of a spring-steel blade or clip that was flexible in both directions. The characteristics of this clip had to match those of the rubber solepad exactly, so as to ensure that the latter was as efficient a shock absorber as possible. These conditions were duly met and a doubly-flexible set of fastenings was provided, leaving the rail free to move sufficiently for the vibrations to be absorbed, but without play or shock. Incidentally, railcreep is also eliminated and no maintenance is necessary with this type of fastening.

### Severe Test

For four years heavy traffic on the Paris-Longueau (Amiens) route via Ormoy (Estrées-St. Denis) was carried by track consisting of long welded rails laid on pre-stressed concrete sleepers with doubly-flexible attachments without this track showing any signs of weakness, though no maintenance has been carried out. On the other hand, sleepers of this same type laid elsewhere without rubber solepads have disintegrated in a few months. It is also significant that the first grooved rubber solepads fitted to concrete sleepers have now been in service for seven years and show no tendency towards fatigue or wear and tear.

### Success with Concrete Block Sleepers

So satisfactory did this doubly-flexible fastening prove with pre-stressed concrete sleepers, that it was also tried and found extremely suitable for use with the "mixed-type" reinforced concrete sleeper, consisting of a heavy concrete block under each rail

*(Left) Attachment to oak sleepers (normal position on straight track or easy curve), using two spikes and two flexible claws; (right) arrangement on sharp curve, using metal soleplate*

*Doubly-flexible fastening as used with "mixed-type" sleeper, French National Railways*

and a steel tie-bar connecting the blocks. The concrete under the rail has in no case tended to disintegrate and particularly smooth and quiet running is secured. By virtue of the weight of this type of sleeper and the constant grip on the rail of the doubly-flexible fastening, this form of seating provides very suitable conditions for the use of long welded rails.

### Fastening with Wood Sleepers

A doubly-flexible fastening for wooden sleepers has also been developed as a result of five years' experiment, including vibrating-machine tests. In this case the holding-down fastening consists of a spring-steel claw, instead of the clip, secured by a coach-screw. As the wooden sleeper itself possesses some resilience the claws can be used with or without rubber pads, but the pads are invaluable in protecting the timber from abrasion. Several hundred kilometres of main line are equipped with doubly-flexible fittings on wooden sleepers under various conditions of traffic.

On a 200-ch. curve on the Arras-Longueau main line carrying fast and heavy traffic, creosoted oak sleepers are laid under different sections of rail, to which they are attached by various types of fastening. After the passage of some 80,000,000 gross tons of traffic over them, it was found that the extent to which the sleepers had been cut into was as follows:—

| Test No. | Weight of rail | Type of fitting | Depth of cut |
|---|---|---|---|
| | | | mm. |
| 1 | 50-kg. | Normal coach screws and metal soleplates, without rubber pads or flexible claws. Maintenance, annual tightening | 1·1 |
| 2 | 46-kg. | Coach-screws and flexible claws but without either metal or rubber soleplates. No maintenance or tightening | 1·2 |
| 3 | 46-kg. | Coach-screws, flexible claws and grooved rubber solepads. No maintenance. | 0·2 |

Sleeper-cutting increases rapidly on curves of about 40-ch. rad. and sharper without rubber solepads, but is greatly reduced if they or metal soleplates are used.

It has, however, been found that if rubber solepads are fitted on these sharper curves there is increased wear on the outer edges of the adzing grooves, due to the vertical vibration allowed by the solepad.

The conclusions arrived at, therefore, are that straight or slightly-curved lines with doubly-flexible fastenings—rubber pads and claws—are still in perfect alignment and condition after five years without maintenance. Sleeper-cutting is almost completely eliminated and costly metal soleplates are rendered unnecessary even under heavy and fast traffic. On sharp curves spring clips should be used in conjunction with metal soleplates.

With long welded rails the unvarying grip of the clip is sufficiently powerful not only to prevent normal contraction and expansion accumulating to cause buckling, but also to limit the gap caused by a broken rail in cold weather. For all these reasons the French National Railways decided that, when relaying track with long welded rails in future, only doubly-flexible fastenings were to be used.

## Train-Auto System in Malaya

(*Concluded from page* 356)

working would necessarily have to be carefully explained to the staff concerned who would have to be trained to recognise the difference between topographical interference and a definite emergency check of the pilot train, if such changes could not otherwise be avoided.

### Operating Aspects

Subject to absolute reliability, the scheme meets requirements. The procedure for the drivers of the pilot and mail trains was shown to leave little to be desired.

The small aspects are sufficient to assure drivers that the line ahead is intact but do not divert attention from fixed signals and their other normal duties.

Locomotive supervisory staff have commented favourably on the application. Little is involved as far as the pilot locomotive driver is concerned, but should he omit to operate his plunger at the appropriate time, then the restrictive aspect is given on the mail train, and no damage is involved—only delay, by virtue of the change from green to red aspect on the unit on the mail train.

### Accommodation of Protecting Forces

The application of the aspects being shown in the third class brake van is useful. This type of vehicle has been used so that protecting forces (military or police) could travel in the seating accommodation, and could be warned immediately of an unscheduled stop of the pilot train.

The experimental work was carried out under the instructions of the General Manager, Malayan Railway, the late Sir John Sanders, whose permission to publish this report is gratefully acknowledged by the author.

BRITISH ROAD SERVICES TELEPRINTER SERVICE.—A 70-mile two-position teleprinter switchboard, in service at the main British Road Services London teleprinter centre, is equipped for broadcasting to 40 stations, which allows simultaneous country-wide contact to be made with all switching stations. The broadcast control keys are colour-coded to facilitate rapid selection of the type of link-up required. In normal circumstances B.R.S. employ the broadcast facility on a fixed-time basis, so as to minimise interruption of the normal flow of operations messages. The broadcast panel is used to give four daily broadcasts; special broadcasts, however, can be set up on demand for matters of the greatest urgency and extensive use was made of this facility at the time of the East Coast floods last year.

# RAILWAY NEWS SECTION

## PERSONAL

Mr. Hugh Molson, M.P., Joint Parliamentary Secretary to the Ministry of Transport & Civil Aviation, has appointed Mr. J. H. H. Baxter to be his Private Secretary with effect from March 16, 1954, in succession to Mr. J. H. Clement.

Mr. R. W. Foxlee, C.M.G., C.B.E., M.I.C.E., Engineer-in-Chief to the Crown Agents for the Colonies, and Engineering Adviser to the Secretary of State for the Colonies, who, as recorded in our March 12 issue, is retiring, comes from an engineering family. He is the elder son of the late Mr. W. T. Foxlee, M.I.C.E., who was formerly Engineer-in-Chief of the New South Wales Railways, and, in his later years, a Consulting Engineer. Mr. R. W. Foxlee's brother, Mr. R. R. Foxlee, also a civil engineer, has recently retired from the service of British Railways. Mr. Foxlee was born in 1885 and educated at Westminster School. He served a pupilage on the then Great Northern Railway under the late Mr. Alexander Ross, M.I.C.E., then Chief Engineer, and served in the New Works Department of that railway from 1906 to 1909, and in the Maintenance and New Works Departments of the Great Central Railway from 1909 to 1915. In 1915, Mr. Foxlee joined the engineering staff of the Port of London Authority, where he gained experience in dock construction and maintenance. In 1921, he joined the Crown Agents for the Colonies, first as Deputy Head of the Engineering Designs Department, later, in 1928, being promoted to be Deputy Chief Engineer (Designs). He was awarded the Trevithick Premium by the Institution of Civil Engineers in 1934 for his paper on "Hammer Blow Impact on Railway Bridges." He became Chief Civil Engineer in 1945, and shortly afterwards, his appointment in a personal capacity as Engineering Adviser to the Secretary of State took place. In 1949, Mr. Foxlee was appointed Engineer-in-Chief, and, in this latter position, he has been responsible for all the engineering activities of the Crown Agents' Office, which included the function of Consulting Engineers to the Colonial railways. A strong advocate of the principle of standardisation, Mr. Foxlee has served on numerous committees of the British Standard Institution, and at present represents the Colonial Office on the General Council of that body. He also represents the Crown Agents on the General Council of the Codes of Practice, and on the International Association for Bridge & Structural Engineering. He is a Member of Council of the Institution of Civil Engineers, where he represents Members of that Institution resident in the Colonies. He is also a member of the Smeatonian Society of Civil Engineers. During 1949 and 1950, Mr. Foxlee made an extensive tour of East and Central Africa, visiting Kenya, Uganda, Tanganyika, Zanzibar, Nyasaland and Northern Rhodesia, during which he travelled over most of the railway systems in those territories, thereby gaining first-hand knowledge of their conditions and problems. In 1952, he was Chairman of the Conference called by the Colonial Office for the standardisation of Colonial railway equipment, and is again taking the chair at a similar Conference to be held at the end of this month. Mr. Foxlee will attend the forthcoming session of the International Railway Congress which will take place in London in May as a Government Delegate. He was created a Commander of the British Empire in 1954, and a Companion of St. Michael and St. George in the New Year's Honours, 1953.

*Mr. R. W. Foxlee*
Retiring Engineer-in-Chief,
Crown Agents for the Colonies

*Mr. A. Campbell*
Elected President,
Institution of Locomotive Engineers

Mr. Archibald Campbell, C.B.E., M.I.Mech.E., M.I.Loco.E., M.Inst.W., Chief Mechanical Engineer, Crown Agents for the Colonies, who, as recorded in our March 12 issue, has been elected President of the Institution of Locomotive Engineers, was born in 1891, and received his technical education at the Royal Technical College, Glasgow. He served his apprenticeship with the North British Railway, Glasgow, from 1906 to 1911, completing his training in the drawing office. From 1912 to 1914 Mr. Campbell was draughtsman & Estimator with G. D. Peters & Co. Ltd., Slough. He joined the Crown Agents for the Colonies in 1914 as a Draughtsman in the Engineering Designs Department. During the 1914-18 war he served with

*Mr. C. R. Campbell*

Appointed Motive Power Superintendent, Scottish Region

*Mr. T. P. Strafford*

Assistant Divisional Operating Superintendent, Derby, L.M. Region

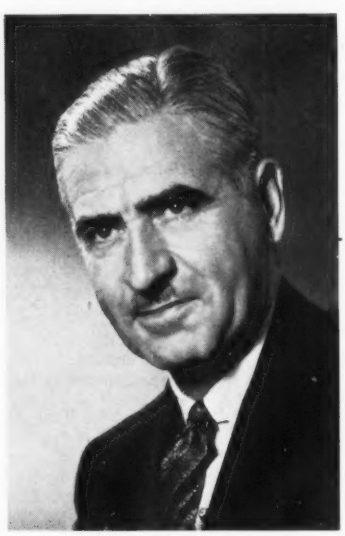
*Mr. H. S. Crosthwaite*

Appointed District Operating Superintendent, Leeds Central

the Royal Engineers (1916-1918). He returned to the Crown Agents after military service and was promoted Assistant Engineer in 1921, becoming Deputy Chief Engineer (Mechanical) in 1935. On the re-organisation of the Crown Agents Engineering departments in 1948, Mr. Campbell was appointed Chief Mechanical Engineer and head of the Mechanical Engineering Department. In 1939 he visited Iraq in connection with the design of locomotives and rolling stock for the 4 ft. 8½ in. gauge section then being completed between Baiji and Tel-Kotchek. Between 1942-1945 he was Liaison Officer for supplies and equipment for Colonial Railways and was attached to the Directorate of Transportation, War Office. He visited Canada and the U.S.A. in 1946 in connection with orders for locomotives. He visited Nigeria, Gold Coast and Sierra Leone in 1949 and again in 1952 to study the railways and investigate problems of supply of mechanical equipment to the various departments of these Governments. Mr. Campbell has recently returned from a visit to East Africa in the course of which he travelled extensively throughout Kenya, Uganda and Tanganyika covering principally the railways, harbours and telecommunications. He has been a Member of Council of the Institution of Locomotive Engineers since 1945 and a Vice-President since 1950.

Mr. C. R. Campbell, Divisional Motive Power Superintendent (Western Division), Crewe, London Midland Region, British Railways, who, as recorded in our March 5 issue, has been appointed Motive Power Superintendent, Scottish Region, was educated at Whitworth School and Derby Grammar School and subsequently took engineering courses at Derby Technical College and Nottingham University. He entered the service of the Midland Railway as a privileged apprentice in 1918, passed through the various shops and the drawing office, and was transferred to the Motive Power Department in 1923. After serving in various positions he became an Assistant in the Office of the Superintendent of Motive Power, L.M.S.R., in 1934. A year later he was appointed Assistant to Divisional Superintendent of Operation (Motive Power), Derby. In 1938 he was made District Locomotive Superintendent at Carlisle, and, in 1941, took over the corresponding post at Newton Heath, moving to Crewe in 1948.

Mr. T. P. Strafford, who, as recorded in our February 26 issue, has been confirmed in the position of Assistant Divisional Operating Superintendent, Derby, London Midland Region, British Railways, joined



*Mr. Maynard A. Metcalf*

Appointed Vice-President of Traffic Canadian National Railways

*Mr. G. C. Tompkins*

Appointed Assistant Works Manager (Car), Angus Shops, C.P.R.

*Mr. J. Hadfield*

Elected a Director, Beyer, Peacock & Co. Ltd.

the London & North Western Railway in 1919 as a probationer. After experience in the Commercial and Operating departments at numerous stations, in the District Goods Manager's Office, Broad Street, and the District Superintendent's Offices, Euston, and Manchester (Exchange), he was transferred, at the time of the amalgamation, to the Control Office, Kentish Town. After occupying various posts in Control and divisional offices, he held appointments as Assistant District Controller at Barrow-in-Furness (1931-32), Chester (North Wales & Joint District) (1932-36), and Liverpool (1936-38). Early in 1938, Mr. Strafford took charge of the Trains Office, Euston, under the Divisional Superintendent of Operation, Crewe; and he remained in that position until January, 1940, when he was appointed District Controller, Rowsley. In March, 1944, he became District Controller, Carlisle, transferring to Crewe as District Operating Manager in 1946. In June, 1948, he was appointed District Traffic Superintendent, Carlisle, and, in 1949, he became District Operating Superintendent, Leicester. He has acted as Assistant Divisional Operating Superintendent since June, 1953.

Mr. H. S. Crosthwaite, Assistant District Operating Superintendent, Darlington, North Eastern Region, British Railways, who, as recorded in our March 12 issue, has been appointed District Operating Superintendent, Leeds Central, began his railway service at Burntisland in 1923. After a period at Kinghorn Station and in the District Operating Department at Burntisland, he was appointed a Traffic Apprentice in 1933. A man of exceptionally wide experience, Mr. Crosthwaite has seen service in many departments of the railway in the West Riding, the Midlands, Manchester, East Anglia, and London. He is no stranger to Leeds, having served there in 1934 and again in 1942, when he was Assistant to the District Goods Manager. He was Goods Agent, Dewsbury, 1943-44, and became head of the Canvassing & Development Section at York in 1945. A year later he was appointed Assistant District Superintendent, Sunderland. He moved to Darlington in 1947 in a similar capacity, and was re-designated Assistant District Operating Superintendent in 1949. Mr. Crosthwaite's appointment at Leeds dates from Monday, March 8.

Mr. Maynard A. Metcalf, C.B.E., Executive Assistant to the President & Vice-President, Canadian National Railways, who, as recorded in our March 19 issue, has been appointed Vice-President of Traffic for the system, brings to his new position a wide and intimate knowledge of railways, together with an extensive and close association with executives in business and industry in Canada and the United States. Mr. Metcalf, who was born on December 23, 1895, joined the railway in 1910, and, in the course of his 44-year career, he has become one of the best known railwaymen on the American continent.

Mr. G. C. Tompkins, Production Manager of the Angus Shops at Montreal, Canadian Pacific Railway, who, as recorded in our February 5 issue, has been appointed Assistant Works Manager (Car) of the Angus Shops, joined the railway as a boy helper at the shops in 1917 at the age of 14. He later became an apprentice machinist and by 1937 had become Locomotive Inspector at Angus. He had been General Contract Foreman from 1939 when, in 1940, he was sent to England on special war work, being on loan to Associated Aircraft. He returned later that year to become Munitions Foreman and then Assistant General Munitions Foreman, when the railway shops were turning out vast quantities of war material. Since 1950, Mr. Tompkins has been Production Manager at Angus.

Mr. James Hadfield, M.B.E., M.I.Mech.E., M.I.Loco.E., who, as recorded in our March 19 issue, has been elected to the board of Beyer, Peacock & Co. Ltd., was born in 1900. He took his academic training at the Manchester College of Technology, of which he is an Associate, and his early training in locomotive engineering was obtained in the Gorton Works of the former Great Central Railway. In 1921, on completion of his apprenticeship, he was appointed Draughtsman in the Railway Locomotive Drawing Office and obtained experience in the Materials Inspection Bureau. He joined Beyer Peacock in 1924 as a Draughtsman, and four years later transferred to the Works as Assistant Production Engineer. In 1929 he was put in charge of the Progress Department, and in 1930 became Assistant Works Manager. From 1933 to 1939 he was in charge of the Drawing Office, and in 1940 he was appointed Technical Superintendent with responsibility for the Works and Drawing Office. Promotion to Technical Manager, responsible for all design and manufacture, followed in 1943. In the same year he was made a Local Director of Beyer Peacock & Co. Ltd. and four years later was appointed to the board of Richard Garrett Engineering Works Limited, with works at Leiston, Suffolk. When Metropolitan-Vickers and Beyer Peacock formed a joint company in 1949, Mr. Hadfield was appointed Managing Director, a position he still holds. In 1952 he was elected a Director of the newly-formed company Rail Traction Supplies Limited. Mr. Hadfield has travelled extensively overseas and since the war has made two visits to South Africa and Rhodesia, two trips to the United States, and last year undertook a strenuous tour of Australia and New Zealand. From time to time he visits the continent to keep abreast of continental practices. Mr. Hadfield holds a number of patents, including the self-adjusting pivot centre for articulated locomotives and the Hadfield Precision Reverse Gear. Mr. Hadfield was made an M.B.E. in 1944 in recognition of his work in connection with war contracts.

We regret to record the death on March 21, at the age of 61, of Sir John Sanders, C.M.G., General Manager of the Malayan Railway since 1946. Mr. John Owen Sanders was born on September 30, 1892, and was educated at Elstow School, Bedford, and Owens College, Manchester. He was trained in railway engineering at the London & North Western Railway locomotive works at Crewe, but his career was interrupted by the 1914-18 war, when he served in the Army. In 1924, he was appointed Works Manager of the Federated Malay States railways, and was promoted to the position of Transportation Manager some six years later. After the invasion of Malaya by the Japanese in 1942, he joined the Royal Engineers and for a time was Transportation Officer in Eritrea. In 1943 he was recalled to this country to join the Malayan Planning Unit in the War Office. In 1944-45 he was Technical Adviser to the Chief Civil Affairs Officer for Malaya, and, in the last phase of military government in the country, had charge of the railways with the acting rank of brigadier. Mr. Sanders was awarded the C.M.G. in 1948, and since 1951 he was Member for Railways for Railways & Ports in the Federation Government. His knighthood was conferred last January. Cremation takes place today (Friday) at 11.30 a.m. at Golders Green.

Mr. P. C. Durrant, General Agent of British Railways for France, is retiring at the end of this month.

Mr. C. Furber, Commercial Superintendent, Western Region, British Railways, retired on March 25.

We regret to record the death in Canada, at the age of 62, of Major-General Charles Philip Fenwick, Chief of Medical Services, Canadian Pacific Railway since 1946.

Mr. G. A. Hannah, Managing Director of Pegson Limited, has been appointed a Director of the parent company, Mellor Bromley & Co. Ltd.

Mr. W. F. Beatty has been confirmed as District Engineer, Crewe, London Midland Region, British Railways.

Mr. J. W. J. Webb, former Assistant Chief Financial Officer, Railway Executive, has been appointed Accountant to the Southern Region, British Railways.

### International Railway Congress

Mr. J. L. Harrington, Chief Officer, Marine & Administration, British Transport Commission, has been elected Chairman of an Arrangements Committee of Officers from British Transport Commission Headquarters, British Railways Regions, British Transport Commission associated undertakings and London Transport. Mr. C. E. Whitworth, British Transport Commission, has been appointed English General Secretary of the Congress.

### Institution of Civil Engineers

The following have become Graduates of the Institution:— Messrs. D. G. Bray, B.E., (W. Australia), P.W.D., Dar-es-Salaam, Tanganyika Terr., B.E. Africa, A. D. F. Gabb, Stud.I.C.E., c/o Sir William Halcrow & Partners, P.O. Box 2311, Accra, Gold Coast, British West Africa, R. T. Hamilton, B.Sc. (Aberdeen), Sir Alexander Gibb & Partners, 43 Northumberland Street, Edinburgh, 3, R. J. Thomas, Stud.I.C.E., P.W.D., Seremban, Negri Sembilan, Malaya, E. F. Tindall, B.Sc. (Eng.) (London), Stud.I.C.E., P.W.D., Kuala Krai, Kelantan, Malaya.

### The Institute of Transport

Sir Reginald Wilson, Member, British Transport Commission, has been elected a Member of Council with immediate effect.

The following Officers were elected for the year 1954-55:

*Vice-Presidents*:—Mr. James Amos, O.B.E., Chairman, Scottish Omnibuses Limited; Sir John Benstead, C.B.E., Deputy Chairman, British Transport Commission; Messrs. R. W. Birch, Chairman, Potteries Motor Traction Co. Ltd.; C. K. Bird, Chief Regional Manager, Eastern Region, British Railways; F. H. Cave, General Manager & Secretary, Mersey Docks & Harbour Board; Peter G. Masefield, Chief Executive, British European Airways.

*Hon. Treasurer*:—Mr. S. B. Taylor, Chief Secretary, British Transport Commission.

*Hon. Librarian*:—Mr. H. H. Crow, Chairman & Managing Director, Crow Carrying Co. Ltd.

## Midland Railway Company of Western Australia

The annual general meeting of the Midland Railway Co. of Western Australia Ltd. was held on March 18 in London.

Mr. Robert P. W. Adeane, O.B.E., the Chairman, in the course of his speech, said that the results for the year under review, after taking into account the liability for a year's interest on the Second Debenture Stock, showed a loss of £112,000. Some of this loss was attributable to the strike referred to in the report, which lasted from February until August, 1952, and caused an accumulation of repairs and maintenance work to be brought forward to the year under review.

Grave as were the effects of the strike, not all the loss for the year could be attributed to that cause, without which there would still have been a deficit, though of course a smaller one.

The loss was partly offset by crediting some £25,000 from taxation reserve of the previous year.

Gross receipts for the first seven months of the current year were up on the previous year, but he regretted to say not to the extent that was expected.

In the first seven months of the current year they had not earned sufficient to cover the amount required for renewals, but in the past few weeks there had been an improvement in traffics. There would need to be a considerable increase in receipts with no increase in expenses before they could hope to earn sufficient to meet interest on second debenture stock.

The report was adopted.

## British Road Services Experiment with Light Alloy Cabs and Bodies

A series of experiments has been conducted by British Road Services with road lorries fitted with cabs and bodies made of lightweight alloy, which enables the payload to be increased by as much as 13 cwt. in the case of a representative eight-wheel rigid vehicle.

These experiments have been carried out with two makes of eight-wheel rigid chassis. The body dimensions are identical with those of the normal vehicle of this type, which are the maximum permissible under the Construction & Use Regulations, and the lightweight construction enables a payload slightly in excess of 15 tons to be carried, compared with a little over 14 tons 7 cwt. for the normal vehicle.

While the main objective is to increase the available payload capacity, the lighter vehicle also has the advantage that irrespective of its load, fuel and tyre costs are reduced.

Besides the experiments carried out with the maximum capacity eight-wheel lorries, trials are proceeding with other types of vehicle, but British Road Services has now decided that the lightweight form of construction will be standard in future for eight-wheel flat platform and dropside vehicles.

*British Road Services lorry with cab and body constructed of lightweight alloy*

## Experimental One-Man Bus

Three "RF" single-deck buses have been converted to pay-as-you-enter one-man operation and have gone into service in the London Transport Country Area. It is hoped that one-man operation will result in economies and enable the routes on which these buses work to pay their way.

The conversion of a 7-ft. 6-in. wide vehicle, without an offside cab door, for pay-as-you-enter operation has been achieved by hingeing on the forward centre bulkhead pillar a full-length door carrying a glass screen, shelf, coin trays, and two Ultimate ticket-issuing machines so giving the driver unimpeded access to his cab while providing a convenient location for his special ticket equipment. This gives maximum clearance for passengers when the cab door is in the open position against the front bulkhead. The door carries a handrail at waist level, below which it is shaped inwards to give maximum footroom.

To permit free entry to the saloon and adequate circulating and standing space near the pay window, the front part of the nearside longitudinal seat has been removed, thereby reducing the seating capacity from 41 to 39.

*Ticket issue apertures on door fitted on forward centre bulkhead pillar in London Transport one-man bus*

### Emergency Exit

A suitable emergency exit has been provided by combining the two glass panels on the offside of the driver into one removable framed unit, controlled by handles inside and outside and incorporating a self-balanced vertically-sliding window for signalling purposes. The cab has been widened to line up with the cab door. The additional space to the nearside of the driver's shoulders has been used to accommodate a Brandt change-giving machine and also, incidentally, to enlarge the driver's locker above the cab. Below the change-giving machine is the used ticket box.

In all other respects the appearance, structure, and seating of the vehicle remain unchanged, and it can be operated with a conductor if so required.

Other features include a small sliding panel to allow the driver to communicate with passengers, an inside mirror to permit him to see the length of the centre gangway, and a luggage compartment in the vacant space over the nearside front wheel arch.

The glass screen, with its coin trays, can be floodlit at will; it directly faces the boarding passenger and contains a speaking aperture marked "Please state destination." On the forward side is an aperture containing a tray and the words "Pay here." To the rear is a further aperture marked "Tickets and change" with the tray so placed as to connect directly with the change-giving machine.

ASSOCIATED ELECTRICAL INDUSTRIES LIMITED.—A final dividend of 6¼ per cent and bonus of 1¼ per cent proposed by Associated Electrical Industries makes the equivalent of 11¼ per cent on the present ordinary capital of £17,741,192 for the year 1953. Net dividends for 1953 will absorb £975,766 (£931,413) and the bonus an additional £121,970. The group trading profit of £10,745,000 compares with £9,904,000 in 1952; net profit of £2,933,000 compares with £2,702,000.

# Electrification in Western Germany

*Conversion of more sections planned*

It is intended to electrify the following sections of the German Federal Railway within the next four years:—

| | Km. | | |
|---|---|---|---|
| Muhlacker—Bruchsal ... | ... 33 | May, | 1954 |
| Nuremberg—Wurzburg ... | ... 102 | Autumn | 1954 |
| Bruchsal—Heidelberg ... | ... 38 | May, | 1955 |
| Heidelberg—Mannheim ... | ... 18 | ,, | 1956 |
| Wurzburg—Aschaffenburg | ... 89 | Autumn | 1956 |
| Aschaffenburg—Frankfurt | ... 46 | ,, | 1957 |
| Basle—Freiburg ... ... | ... 61 | ,, | 1955 |
| Freiburg—Offenburg ... | ... 63 | ,, | 1956 |
| Offenburg—Karlsruhe ... | ... 71 | ,, | 1957 |
| Hamm—Dusseldorf ... | ... 124 | ,, | 1956 |

Orders for locomotives for the Nuremberg-Würzburg electrification have been placed. Planning for the electrification of the undermentioned lines, towards which certain provinces have offered loans, has reached an advanced stage.

| | Km. |
|---|---|
| Heidelberg—Frankfurt ... ... | ... 88 |
| Darmstadt—Mainz (Bischofsheim) ... | ... 26 |
| Frankfurt—Mainz via Mainz—Bischofsheim | 38 |
| Mannheim—GrossGerau—Frankfurt | ... 81 |
| Frankfurt—Lorch via Wiesbaden ... | ... 84 |
| Frankfurt—Giessen—Dillenburg ... | ... 107 |
| Dortmund—Duisburg—Gelsenkirchen | ... 56 |
| Koln—Remagen ... ... ... | ... 95 |
| | 575 |

In connection with these lines the electrification of the Rhine left and right bank lines is contemplated, with priority to the left (Bonn) bank line over which the "Rhinegold" and other important international trains are worked.

### Choice of System

Discussions are being held in railway, public, industrial, and political circles on the power system to be adopted. The Federal Railway authorities favour single-phase 16⅔ cycles a.c., as most Western German electrified services are worked on this system and standardisation is desirable to enable locomotives to be interchanged. The power consumption of the Federal Railway amounts to 600,000,000 kWh. a year, 60 per cent derived from water power. After the electrification of the lines to be converted by 1957, the total annual consumption of electricity is estimated to be 2 billion kWh.

### Ruhr Electrification

Early in 1953 a contract was concluded between the Federal Railway and Nordrhein-Westfalen Province for electrification of the Ruhr main lines. All main lines to be electrified must be re-surveyed, as diagrams prepared before the war were destroyed. The survey work will take four months.

Other difficulties are expected from the fact that many bridges, superstructures, station buildings, and signal-boxes do not comply with the clearance requirements for electric operation. On the Düsseldorf-Duisburg main line 19 large bridges and 23 signal gantries have insufficient clearance and between Düsseldorf and Hamm 60 road bridges must be rebuilt.

The Düsseldorf - Duisburg main line is double track but two more tracks are needed to relieve congestion. Quadrupling would cost an additional 8,000,000 DM, which cannot be spared at present.

Meanwhile the preparatory work for the construction of 18 three-car trains required has been concluded. Orders for the electrical equipment have been placed with Western German firms. There are two working stages envisaged for the electrification of the Ruhr lines: first Hamm-Dortmund - Bochum - Essen Hauptbahnhof - Duisburg - Düsseldorf, and secondly, Dortmund - Gelsenkirchen - Essen - Altenessen - Oberhausen - Duisburg. Electric service is planned to be introduced with the 1956 summer timetable, provided that no unexpected difficulties delay the normal course of work. It is doubtful when the electrification of the adjacent line beyond Düsseldorf to Cologne and Remagen, can be envisaged.

# Institution of Railway Signal Engineers

At a meeting in London on February 17 of the Institution of Railway Signal Engineers, with the President, Mr. T. Austin, in the chair, a paper was read by Mr. J. F. H. Tyler on "Some Signalling Developments on the Western Region 1947-53" the subject of an editorial article in our March 5 issue.

The paper dealt with coded track circuits (pulse-fed tracks); intermediate block section installations; multiple-aspect signalling; enginemen's telephones; protection of personnel working on supply mains; relay room equipment; layout of signalboxes and relay rooms; colour-light distant signals; use of mechanical plant for installation; and the use of radio.

Mr. A. W. Woodbridge felt that they must bear in mind not so much what apparatus was to be put in as how it should be put in, for the problem today was financial, and it was essential to keep costs down.

Mr. J. H. Fraser commented on the way in which the Western Region were thinking well ahead, particularly where the design of track circuits was concerned.

Mr. L. J. M. Knotts was impressed with the attitude taken with regard to the type of track circuit to be used to combat the great handicap of fang bolted track. Referring to A.T.C., he understood that, as drivers were used to an A.T.C. ramp on the approach side of distant signals, they were not finding any difficulty with the multi-aspect colour-light signalling between Paddington and Southall.

Mr. A. F. Moss hoped that in the development foreshadowed by Mr. Tyler, greater use would be found for a less expensive type of relay, as there was scope for that in the less important parts of a circuit.

Mr. J. P. Coley suggested, to overcome polarisation troubles with coded track circuits, the use of a specially designed relay with reduced sensitivity, so that its pick-up and drop-away values were appreciably above the polarisation voltage.

Mr. J. C. Kubale was surprised to hear that no use had been found for the code itself in the coded track circuit, as it had possibilities and was in use in other countries. As to concrete signal bases, he had observed in South Africa recently the use of reinforced concrete for this purpose, an idea which might prove useful here.

### Maintenance Cost of Mechanical Equipment

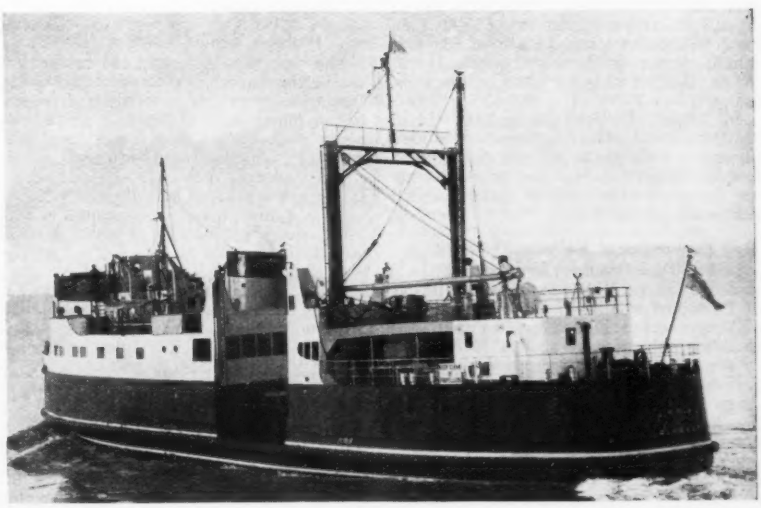
Whilst appreciating the mechanical aids available nowadays for installation work, he would like to know by how much they improved efficiency. He asked what was the overall cost and maintenance of the mechanical equipment, compared with what might be called the old-fashioned methods?

Mr. J. E. Mott said that it seemed that the simple pulse track circuit was a better proposition economically than the coded track circuit. He would like to have some idea of the maintenance that had to be put into these types of track circuit, and of their reliability.

Mr. J. H. Currey wished to see the use of the pulse fed track circuit extended, as it would help on long intermediate block sections where the original coded track circuit would be too costly.

Mr. Tyler replied to the points raised in discussion and received a very cordial vote of thanks, proposed by the President.

## Dual-Purpose Ship on Clyde Services



*British Railways m.v. "Arran", specially designed to carry passengers, cargo, road motor vehicles, and cattle, in service between Gourock and Dunoon*

*Parliamentary Notes*

# Transport Freight Charges Debate

*Freight charges scheme expected within three months; railways not to be subsidised*

Sir David Robertson (Caithness & Sutherland—C.) moved in the House of Commons on March 17 that the Railways (Additional Charges) (Amendment) Regulations, 1954, be annulled.

He said that railway freight charges now averaged 153 per cent above prewar, and in some cases as much as 179 per cent. Something was wrong with the management of British Railways. Numbers of workers were being retained by British Railways whose services were not required. Sheep could be brought from New Zealand more cheaply than from his constituency. The railways should look for their earnings to a large turnover, not to high charges. The last 10 per cent asked for was the last straw. The railways should be used properly, not kept idle while the roads were overcrowded and dangerous. The Government should tell the Transport Commission to put their house in order.

Mr. J. MacLeod (Ross & Cromarty—Nat. Lib.-Con.) seconded the motion. He asked the Minister to agree with a recommendation of the Cameron Report that further steps of a tapering rate should be introduced.

Mr. Malcolm Macmillan (Western Isles—Lab.) said that the situation had been created by a deliberate act of Government policy. Railwaymen's wage increases could have been offset by the profits from the B.T.C. road services this year. The railways were pricing a tremendous amount of freight on to the roads, and the point would be reached where they could no longer pass on their increased costs to the transport user. It would be better to arrive at some arrangement whereby concessions could be made, even at some financial loss, rather than lose the traffic altogether.

Mr. J. R. E. Harden (Armagh—U.U.) said that the only way to overcome the difficulty was to adopt a flat rate system of transport. That would be a great help to the remote areas.

Mr. J. Grimond (Orkney & Shetland—Lib.) said that if assistance was to be given to transport in the remote areas then he would rather see it done by a fair and square charge on the Exchequer and not by an indirect charge on other transport users.

Mr. Percy Collick (Birkenhead—Lab.) said that if Conservative members wanted uneconomic freight rates from Scotland to London they must face the issue, and get the Government to agree to some financial concession to the B.T.C.

### Economies in Railway Working

Lady Tweedsmuir (Aberdeen S.—C.) said they were entitled to ask the Minister of Transport whether the Commission was making a determined effort to shift men to other industries or reduce recruitment to the railways. If anybody could make British Railways a business concern, Sir Brian Robertson would be able to do so. She hoped Minister would be able to announce an increased tapering charges scheme. The Government would have to consider whether attractive rates and economies combined with the effect of tapering charges schemes and special rates would be sufficient for the areas which were remote from the main market.

If they were not sufficient the Government would come to a very great question, and that was: "What is Government policy towards transport system as a whole?"

She thought Sir Brian Robertson would be prepared to make the effort to make the railways pay without a subsidy, while supporting a tapering charges scheme and special individual rates for certain industries. If the railways were a strategic security investment, the time might well come when, for strategic reasons alone, they might have to consider a subsidy in particular cases.

Mr. Ernest Davies (Enfield E.—Lab.) said that the Opposition admitted that some rate increases might have been necessary because prices had risen more than freight rates or fares.

### Effect of Government Policy

Prices had gone up because Government policy had caused a rise in the cost of living with consequent wage demands. Their transport policy was preventing the Commission from effecting greater economies, increasing efficiency, and integrating road and rail services.

Mr. Alan Lennox-Boyd (Minister of Transport & Civil Aviation), said that the Commission applied to him on December 30 for a 10 per cent increase. He referred the matter the next day to the Transport Tribunal. Some criticism had been made that the Tribunal had not held a public inquiry or consulted trade or industry. It was for the Tribunal to determine its own procedure, but it had probably been influenced by his request for early advice and also by the urgency of the Commission's financial situation.

Without that early recommendation the Commission would have gone on adding to its deficit at the rate of £500,000 a week. The Commission had a duty to make its undertaking pay. There could be no question of a subsidy to help it with its current expenses and on this the Government, the Commission, and Sir Brian Robertson were in complete agreement.

### Railway Freight Charges Scheme

The new railway freight charges scheme would almost certainly be presented by the Commission to the Transport Tribunal within the next three months. There were many stages after that when trade and industry in Scotland and Northern Ireland could express their views. Sir Brian Robertson intended that there should be an opportunity for prior consultation with using and other interests, in which particular attention would be paid to the views of Scottish industry. Under the 1947 Act there also had to be a public inquiry on the charges scheme, which would be another opportunity for expressing views. Under the new scheme it was intended that a higher proportion of transport costs should be absorbed at an earlier stage than at present, namely by the really short distance traffic—and the medium and long distance traffic would benefit accordingly, and the commission intended, if the scheme was approved, to quote commercial rates for general merchandise traffic which would take load and distance more fully into account.

After further discussion the motion was negatived.

A similar motion relating to canals was moved by Mr. Davies, and was also negatived.

### Post Office (Site & Railway) Bill

The British Transport Commission has lodged a petition against the Post Office (Site & Railway) Bill.

## Questions in Parliament

### Stockholders in Nationalised Industries

The Chancellor of the Exchequer, Mr. R. A. Butler, answering a question put by Mr. Harold Davies (Leek—Lab.) on March 15 said he would not open the names of stockholders in nationalised industries to public inspection. He explained that no question of ownership or control by stockholders arose in these cases and they were, therefore, not comparable with privately owned public companies.

### Transport in North London

Mr. Austen Albu (Edmonton—Lab.) on March 17 asked what reply the Minister of Transport & Civil Aviation had given to the letter from the Edmonton Borough Council, complaining of the inadequacy of transport facilities in Edmonton and northwards on the line of the main Hertford road.

Mr. Alan Lennox-Boyd in a written reply said that he had asked the B.T.C. to reconsider the possibility of electrifying the surface railways in this area before constructing Route "C," and reminded the Council that detail plans for Route "C" were being prepared.

### Burma-Siam Railway

Mr. Stan. Awbery (Bristol Central—Lab.) on March 17 asked whether the question of compensation to men who were forced by the Japanese to work on the Burma-Siam Railway had been settled; the total compensation paid; and the average to each man.

Mr. A. D. Dodds-Parker (Joint Parliamentary Under-Secretary of State for Foreign Affairs) stated in a written reply: I presume Mr. Awbery has in mind the sum of £355,000 arising from the sale of the Burma-Siam railway. Since nationals of other countries worked on the railway, it has been necessary to determine how this sum should be divided between the countries concerned. Discussions with other Governments are not yet complete.

## Staff & Labour Matters

### Engineering Wage Claim

In accordance with the recommendations made recently by the court of inquiry appointed to inquire into the dispute on rates of pay in the engineering industry, the engineering employers have offered the unions a 5 per cent increase in pay. This was in answer to the unions' original claim for a 15 per cent increase. The unions indicated that the offer was not acceptable and that they would report to their executives that it offered no basis for negotiation.

### Minister of Labour and Wage Talks

Members of the T.U.C. Economic Committee and union representatives on the National Joint Advisory Council have advised the Minister of Labour, Sir Walter Monckton, that for the time being they are unable to fall in with the suggestion that an impartial and authoritative body should be set up to examine the effect of wages, costs and prices on the nation's economy.

## Contracts & Tenders

G. R. Turner Limited has received an order for 59 bogie covered wagons for the Sierra Leone Government Railway. They are to be built to the supervision and inspection of the Crown Agents for the Colonies.

C. C. Wakefield & Co. Ltd. is supplying 250 Wakefield hydrostatic locomotive lubricators for locomotives being built in Germany for the Indian Railways, and 125 for locomotives under construction in Japan for India.

British Railways, Eastern Region, have placed a contract with Wellerman Bros. Ltd., Sheffield 3, for the reconstruction of superstructure of Hall Lane Overbridge between Barrow Hill and Killamarsh West.

British Railways, North Eastern Region, have placed an order with L. C. Abdale & Son, Darlington, for alterations to existing and provision of new lavatory accommodation at North Road Locomotive Works, Darlington.

The High Commissioner for India is inviting tenders for crank axles. See Official Notices on page 367.

The Director-General of Supplies and Disposals, New Delhi, is inviting tenders for miscellaneous locomotive stores (36 item numbers) including the following:—

24 piston head for "AWD," "CWD" engines
4 do. for "AWE" engines
20 piston head (steel class II) for "WP," "WP/P" engines
30 crosshead r.h. and l.h. for "AWD," "CWD" engines

Tenders are to be submitted to the Director-General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/17130/II and will be opened on April 14.

Forms of tender are only available for purchase in India from the Deputy Director-General (Supplies), Directorate-General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras.

If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram so long as all essential particulars are given and provided they simultaneously apply for tender forms and return them duly completed as quickly as possible on the basis of advance quotations already submitted.

A copy of the tender form can be examined at the India Store Department, London, on application to the "CDN" Branch and the drawings can be seen at the offices of Hodges, Bennett & Company, 59-60, Petty France, London, S.W.1, from whom copies may be obtained at a fixed price per sheet.

The Special Register Information Service of the Export Services Branch of the Board of Trade has issued a circular to explain to United Kingdom importers and exporters the methods by which trade may be carried on with Eastern European countries. The reference is CRE/26970/53 and the circular is dated March 11.

Except in most cases where goods may be imported in this country on World Open General Licence or under special licensing arrangements (such as open individual licensing), which include Eastern European countries, imports into the United Kingdom from these countries require specific import licences. It should also be remembered that export licences are required for those goods covered by the Export of Goods (Control) Order. Detailed information on this subject will be supplied on request by the Board of Trade.

United Kingdom firms wishing to commence or re-commence trade with Eastern Europe are recommended to consult the Commercial Relations & Exports Department of the Board of Trade, which can give advice on the possibilities and methods of trading with Eastern European countries. It is also particularly important that any business visitor to Eastern Europe should inform the appropriate British Embassy or Consulate of his visit before he leaves the United Kingdom and should call on the Embassy or Consulate immediately he arrives.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commisisoner at New Delhi has reported that the Directorate General of Supplies & Disposals, Government of India, is calling for tenders for:—

112 superheater element tubes bottom row with cones and flange for "D" and "D1" classes
56 superheater element tubes bottom row complete with ball cone and flange for "P" and "G" class
14 superheater element tubes complete with cone and flange for "D," "DI," "M," "M2" classes

The closing date for the receipt of tenders is 10 a.m. on April 12. They should be addressed to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. A set of the tender documents, including conditions of contract and drawings, is obtainable on loan from the Export Services Branch, Lacon House, Theobalds Road, W.C.1, by United Kingdom firms.

The Director General of Supplies & Disposals, New Delhi, is inviting tenders for the following:—

(*a*) 25 frame casting (cast steel) for "HS," "HSM" classes. The store is to be machined where marked "F" drilled and tapped except frame holes as shown in the drawing, the card number must be stamped on each casting, and tenderers are required to quote separate charges for pattern
(*b*) 3,300 brake beams (steel class II)
(*c*) 2,100 links suspending brake block bogie carriage (without bush)

Tenders are to be submitted to the Director General of Supplies & Disposals, Shahjahan Road (Section SR1), New Delhi, quoting reference SRI/16887-D/III for (a), SRI/17414-D/II for (b), SRI/18914-D/II for (c) and will be opened on (a) March 30, (b) April 6, (c) April 15.

Forms of tender are only available for purchase in India from the Deputy Director General (Supplies), Directorate General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras.

If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram so long as all essential particulars are given and provided they simultaneously apply for tender forms and return them duly completed as quickly as possible on the basis of advance quotations already submitted.

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## Notes and News

**Draughtsmen Required.**—Two draughtsmen, preferably with railway rolling stock experience are required by Charles Roberts & Co. Ltd., of Wakefield. See Official Notices on page 367.

**Vacancies for Senior and Junior Engineers.**—The General Electric Co. Ltd., of Witton, Birmingham, 6, has vacancies for senior and junior engineers in its switchgear works. See Official Notices on page 367.

**Mechanical Draughtsman Required.**—Applications are invited for the post of mechanical draughtsman required by a firm in South Wales manufacturing railway rolling stock and general engineering products. See Official Notices on page 367.

**Tyne Improvement Commission: Appointment of Assistant Civil Engineers.**—Applications are invited from qualified civil engineers, university graduates in engineering, or student members of the Institution of Civil Engineers who have passed Parts I and II of the associated membership examination, for appointments as assistant civil engineers. See Official Notices on page 367.

**Southern Railway Dramatic Society.**—A performance of Talbot Rothwell's play "Queen Elizabeth Slept Here," will be given by the Southern Railway Dramatic Society at the Scala Theatre, Charlotte Street, Tottenham Court Road, W.1, on Tuesday, April 6, at 6.45 p.m.

**Sales of Road Haulage Units.**—A joint statement issued by the Road Haulage Disposal Board and the British Transport Commission on March 17 gives details of offers and acceptances for List No. 3, advertised on January 27. From a total of 492 units without premises the highest tenders have been accepted for 375 units, or 86 per cent of decided cases. This represents 893 vehicles out of 1,278. All tenders rejected in 61 cases and decisions had still to be reached on 43 units. There were no bids for 13 units. The higher proportion of acceptances in this list as opposed to the earlier ones was the result of more realistic bidding. Units offered with premise in List No. 3 show poor results. No offers were received for 62 out of 180 units and it appears that a high proportion of offers received will have to be rejected. New units will be made up from the rejected vehicles from earlier lists but those will usually be without premises which will be offered for sale by private treaty. Lists to meet "small man" requirements will continue to be offered monthly up to and including List 6.

**Powder-Type Hand Cleanser.**—A powder-type hand cleanser for use in the industry will be demonstrated for the first time at the British Industries Fair, at Castle Bromwich, by Borax Consolidated Limited. Known as Boraxo (Braxo), the cleanser is claimed to combine the effectiveness of a heavy duty cleanser with mildness, and to

remove grease, grime, and chemicals from workers' hands efficiently. The product contains no insoluble or abrasive fillers and the action is provided by small grains of borax which slowly dissolve during the hand-washing operation. The pH value of 9·3 is sufficiently low to avoid chemical damage to the skin or undue removal of natural fats.

**L.M.R. (London) Dramatic Society.**—The London Midland Region (London) Dramatic Society, which celebrates its 21st anniversary this year, gave performances at the Fortune Theatre, London, on March 22 and 23 of "Madam Tic-Tac," by Falkland L. Cary and Philip Weathers. Production was by Jack Pegg. An outstanding performance was that of Beckie Pass as Madam Tic-Tac, though the standard of acting of the whole cast was high, including Connie Wallace as Beth, John Ahern as Luke, Doris Hillebrand as Mrs. Parsons, Margaret Kirby as Chloe, and Jack Pegg as Clem.

**A.B.C. Coupler & Engineering Co. Ltd.**—The A.B.C. Coupler & Engineering Co. Ltd. has recently acquired the entire shareholding of Matling Limited for which the firm has been designing and manufacturing a wide range of transporting and stacking trucks, particularly in connection with palletised loads. Apart from hand pallet transporters all other models may be powered by battery, I.C. engine or mains electric (single or 3-phase). The power unit of battery operated models incorporates B.T.H. 24-V. d.c. constant-speed motor driving through a three-speed and reverse gearbox and clutch. Exide Ironclad batteries carrying a four-year guarantee are standard equipment. I.C. engine power units have the B.T.H. motor substituted for a Villiers four-stroke air-cooled engine with flywheel, magneto and automatic speed control. The range includes high lift straddle stackers suitable for stacking to a ceiling height of 15 ft. at 90 deg. from a gangway 5 ft. 6 in. wide. Among other models is the short wheelbase battery-operated transporter used for loading road or rail vans with palletised loads. Models with lifting capacities of up to 2,000 lb. and transporting capacities of up to 3,000 lb. are available; straddle width and finger length can be provided to customers' individual requirements. All models will continue to be sold under the name of Matling. The company will shortly open new offices at 26/28, Caxton Street, Westminster, S.W.1, where Matling trucks will be kept for demonstration purposes.

**Charles Roberts & Co. Ltd.**—A meeting is to be held at the Horbury Junction offices of Charles Roberts & Co. Ltd. on March 31 for the purpose of implementing the proposals regarding capital which were announced last year. The authorised capital is to be raised to £1,250,000, and £400,000 is to be divided as a special capital bonus among stockholders. A further £400,000 is to be capitalised and issued to stockholders on a two-for-three basis. This £800,000 is from the £1,212,559 now in capital reserve as a result of the liquidation of the company's subsidiary, Glyncorrwg Wagons Limited.

**London Transport Experiments with Low Viscosity Oils.**—The use by London Transport of engine lubricating oils of lower viscosity than hitherto is now achieving an economy in oil fuel consumption of about 6 per cent. This, with an annual fuel bill of well over £6,000,000 for the fleet of 8,000 buses and coaches, represents a saving at the rate of £390,000 a year. Research into the matter dates from the hard winter of 1947, when London Transport carried out pioneer work in establishing that an oil of SAE 20W viscosity, initially employed as an aid to easier starting from cold, should also be used as a summer grade of lubricant. Controlled tests showed no ill effects on engine life, no loss of performance, and no appreciable increase in the consumption of lubricating oil, while the oil fuel consumption dropped by 3½ per cent. Experiments have continued, and during the winter just past an oil of still lower viscosity, SAE 10W, has been adopted and has resulted in further reducing fuel consumption by about 2½ per cent. This oil is at present only being used as a winter grade, but is likely to be standardised for use throughout the year.

**Lightweight Diesel on Harrow-Belmont Service.**—The shuttle service between Harrow and Belmont, London Midland Region, is now performed by the lightweight three-car A.C.V. lightweight diesel train, instead of by a steam train. The move is an experiment which will be continued for some months.

**Experimental Substitution of Bus for Rail Services in Ulster.**—Some train services on the Great Northern Railway in Northern Ireland have been experimentally replaced by Ulster Transport Authority buses. They include Belfast-Banbridge, Banbridge-Rathfriland, Warrenpoint-Newry, Tynan-Armagh, and Dungannon-Cookstown. No decision has yet been taken to close any of the lines.

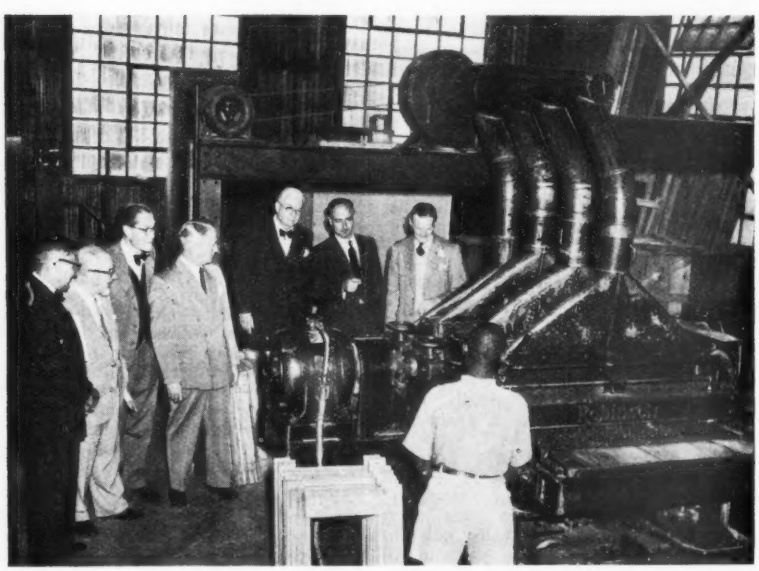
**Canadian Pacific Railway Results.**—The financial results of the Canadian Pacific Railway Company for the year ended December 31, 1953, show gross earnings of $470,571,371 and working expenses of $441,686,799. Net income was $31,450,462. Payment of dividends on preference stock totalled $3,130,586 and on ordinary stock $20,710,474. The annual general meeting will be held in Montreal on May 5.

**Costa Rica Railway Co. Ltd.**—The report and accounts for the year ended June 30, 1953, reveal a profit of £10,551 compared with £8,620 for 1952. The sinking fund for redemption of First Mortgage and Second debentures has taken £3,000 of this (same) and £7,551 (£5,620) has been used as provision on account of Second debenture interest. The working profit of the subsidiary, the Northern Railway Company (of Costa Rica) was £182,760 (£199,540) and a balance of rental of £1,192,947 in respect of the 12 years ended June 30, 1953, remains a liability in that company's accounts and is not shown in the parent company's accounts. This is to be settled when earnings permit. The annual meeting is to be held in London on April 12.

**Isle of Man Railway Company.**—At the general meeting of the Isle of Man Railway Company on March 3, Mr. A. C. Teare, Chairman, presiding, said that though the 1953 season had been disappointing the drop in the visiting traffic returns could be reasonably attributed to special circumstances. The company looked forward with confidence to better times in the coming season. Traffic on the southern section was well maintained and at the height of the season there was continued evidence that nothing could well take the place of the railway in the carriage of large numbers at one time. On the other sections, traffic, even in summer, did not compare favourably, and in those parts the services of their subsidiary bus company were more patronised.

**London Midland Region Ambulance Trophy.**—The competition for the British Railways Midland area Ambulance Challenge Cup was held at Crewe on March 12.

## Inspection of Nairobi Workshops



*Members of the Transport Advisory Council, East Africa, watching carriage window frames being sandpapered at Nairobi workshops, E.A.R. & H. Mr. A. F. Kirby, General Manager, E.A.R. & H., is on the extreme right of the group*

# OFFICIAL NOTICES

*The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.*

TYNE IMPROVEMENT COMMISSION. APPOINTMENT OF ASSISTANT CIVIL ENGINEERS. Applications are invited from qualified Civil Engineers, University Graduates in Engineering or Student Members of the Institution of Civil Engineers who have passed Parts I and II of the Associated Membership Examination for appointment as Assistant Civil Engineers. Applicants should preferably have experience of engineering work associated with a Dock and Harbour Authority which includes the construction and/or maintenance of quays, coal and iron ore handling appliances, railways, transit sheds, building construction, surveying, sounding, dredging, moorings, water supply, drainage works, etc., and the preparation of designs, estimates and contract drawings and specifications in connection therewith. Successful applicants will be required to undergo a medical examination and to become members of the Tyne Commission Superannuation Fund. Commencing salaries will be fixed according to qualifications and experience. Applications stating age, education, and training, qualifications and experience, accompanied by two recent testimonials should reach the undersigned not later than April 22, 1954. J. K. McKendrick, Secretary, Tyne Improvement Commission, Bewick Street, Newcastle-upon-Tyne, 1.

SENIOR DRAUGHTSMAN (Engineering) required by the NIGERIAN GOVERNMENT RAILWAY for one tour of 12 to 24 months in first instance. Salary, etc., £1,254 rising to £1,560 a year. Gratuity at the rate of £150 a year. Quarters provided at rental of 10 per cent of basic salary. Outfit allowance £60. Free passages for officer and wife. Assistance toward cost of children's passages or grant up to £150 annually for maintenance in the United Kingdom. Liberal leave on full salary. Candidates must have extensive experience in preparation of design and working drawings for railway track layouts. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2B/29981/RA.

THE HIGH COMMISSIONER for India invites tenders for the supply of: 32 crank axles, forged steel, hooped, machined and finished but wheel seats rough turned 9½ in. diameter to E.I.R. drawing No. WA 396 ALT 1. Forms of tender may be obtained from the Director General, India Store Department, 32/44 Edgware Road, London, W.2, on or after March 26, 1954, at a fee of 10s. which is not returnable. Cheques to be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Friday, April 23, 1954. Please quote reference No. 392/53.

SURVEYORS and DRAUGHTSMEN. Vacancies exist on staff of British Railways Permanent Way Section, at Kings Cross Station, for young men who are good draughtsmen and conversant with the use of surveying instruments. Salary range £309 10s. at age 20 to £607 10s. at age 36. Five day week, canteen facilities, permanency after suitable probationary period and opportunities for progressing. Free residential railway travelling within specified limits and other reduced rate travelling facilities after qualifying period. Apply in writing giving full particulars as to qualifications, experience, etc., to the Civil Engineer, Eastern Region, British Railways, Kings Cross Station, London, N.1.

R.P. ATKINSON & CO., 12, Waterloo Road, Wolverhampton. Phone Wolverhampton 23617. Steel Bars, Flats, Sections and Sheets, traction and colliery equipment. Enquiries invited.

R. P. ATKINSON & CO., Consulting Engineers & Agents, 12, Waterloo Road, Wolverhampton. Phone Wolverhampton 23617. Drawing office work:— electrical, mechanical, and traction equipment also jig and tool design. Layouts and full detail work to clients specifications.

WANTED, Foreman Blacksmith possessing sound knowledge of general smithing, with ability to design jibs and tools. Flash butt welding experience an advantage. Pension scheme. Wigan district. Box 163, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TWO DRAUGHTSMEN required, preferably with railway rolling stock experience. Charles Roberts & Co. Ltd., Horbury Junction, Wakefield.

MECHANICAL DRAUGHTSMAN required by South Wales firm manufacturing railway rolling stock and general engineering products. Applicants must be capable of designing and detailing this class of work. Pension Scheme. Apply stating age, experience and salary required to Box 158, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRANSLATIONS (Technical, Research, Commercial), all languages carried out by experts. Instruction manuals, patent specifications, conference papers, brochures, sales literature. Abstracts also supplied. Olympia Translation Service, 149, Blythe Road, London, W.14. RIVerside 5135.

THE GENERAL ELECTRIC CO. LTD., Witton, Birmingham 6, have vacancies for Senior and Junior Engineers in their Switchgear Works. Applications are invited from men with experience of, or interest in, Traction Control Gear, Industrial Control Gear, Automatic Substations, Electric Winders and high voltage circuit breakers. Applications should be made to the Staff Manager.

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The winners were Wigan Railway Police with 382½ points; Heysham Police came second with 355½. The winners will take part in the inter-area final competition at the Central Hall, Westminster, on May 21.

**Emu Bay Railway Dividend.**—The Emu Bay Railway announces that interest for the six months ended December 31, 1953, 2½ per cent plus 11½ per cent on account of arrears, will be paid on April 1 to holders of the 4½ per cent irredeemable debenture stock.

**London Midland Region Pictorial Posters.**—The Department of the Public Relations & Publicity Officer, British Railways, London Midland Region, has produced two new posters which will be displayed in all Regions of British Railways. "New Stations for Old" represents the new stations at Gospel Oak and Carpenders Park, which are due for completion this year. This poster was painted by G. H. Davis and produced by photo-litho process in six colours by McCorquodale & Co. Ltd. A poster of Rhyl was painted by V. L. Danvers and produced by drawn-litho in 12 colours by Charles & Read.

**Improved Services to Scandinavia via Harwich-Hook.**—The summer services via Harwich-Hook of Holland as from May 23 include improved connections between London and Scandinavia. The "North West Express" will be restored as a connection with the day service, with a through coach and sleeping car between The Hook and Copenhagen, routed via Grossenbrode-Gedser, and will provide the fastest surface service between London, Copenhagen, Oslo, and Stockholm. The acceleration eastbound will be 1 hr. 44 min. (overall journey 25 hr. 20 min.) whilst westbound there will be a saving of 32 min. The connecting service from Copenhagen to Stockholm will also be improved to give a journey time of 10½ hr.; much the same as in the opposite direction. The "Holland-Scandinavia Express" connecting with the night steamers will be re-routed via Grossenbrode-Gedser with a through coach to and from Stockholm. The timing between London and Copenhagen is cut by 1 hr. 10 min. eastbound and by 1 hr. 50 min. on the return. Swedish State Railways sleeping cars will run in this service between Copenhagen and Stockholm.

**Alverthorpe Station, North Eastern Region, to Close.**—Alverthorpe Station will be closed to ordinary passenger and freight traffic on and from April 5. All parcels, smalls freight, and forwarded and received freight traffic, will be handled at Wakefield Westgate. Excursion and special trains will still run from the station.

**Gloucester Railway Carriage & Wagon Co. Ltd.: Interim Dividend.**—The board of the Gloucester Railway Carriage & Wagon Co. Ltd. has declared an interim dividend on the ordinary shares of 6d. per 10s. unit on account of the year ending May 31, 1954, payable on March 25. This interim dividend, which equals five per cent, compares with 3¾ per cent last year. The total for 1952-53 was 10 per cent.

**Royal Engineer Association London Group: London Sapper Reunion.**—The second reunion of Sappers and ex-Sappers in Greater London will take place on Saturday, May 29, at 7 p.m., at the Duke of York's Headquarters, Chelsea, S.W.3. Price of tickets is 3s. each, and can be obtained from Mr. J. S. Pearson, Hon. Sec., London Group, Room 31, Horse Guards, Whitehall, S.W.1; Adjutant or R.S.M., 101, Field Engineer Regiment, Duke of York's Headquarters; Mr. C. G. Mathews, R.E. Benevolent Fund, 29, Thurloe Street, Kensington, S.W.7; or from any T.A. or regular unit or R.E. Association branch in Greater London.

**Metropolitan Railway Country Estates.**—The statement by the Chairman, Sir Bernard Docker, circulated with the report and accounts for the year ended October 31, 1953, shows that net consolidated profit after providing for tax is £36,190, a substantial improvement compared with the previous year, for which the corresponding figure of net profits was £12,288. The directors recommend a dividend of 10 per cent less tax. If this is accepted, the balance on consolidated profit and loss account to be carried forward will be £126,139, against £109,199 brought in at the beginning of the year. The recovery in profits from the low level of last year is stated to be satisfactory.

**Battery-Operated Emergency Light.**—A type of emergency light supplied in large numbers to the Admiralty and Merchant Navy during the war has now been re-introduced by the General Electric Co. Ltd. The lights are suitable for all applications requiring a battery-operated light that can be brought into use with ease and certainty immediately a power supply failure occurs. They are approved by the Ministry of Transport, and certified by the Home Office for use in inflammable atmospheres containing petroleum vapour. The light consists of a tubular lead-coated steel body containing the batteries, with an armour glass dome at one end enclosing an Osram 2·5-V., 0·3-amp. bulb. Normally it is

stowed with the glass dome downwards, but when reversed an Archimedean gravity type switch automatically brings the light into action. Burning-life varies from 8 to 20 hr. according to the type of cell.

**Cook's Office in Winnipeg.**—An office in Winnipeg has been opened by Thos. Cook and Son (Continental and Overseas) Ltd. Mr. Rowley Ruel Goss is manager. Cook's now have five branches in Canada.

**I.C.I. Display at the B.I.F.**—Imperial Chemical Industries Limited, will be showing industrial applications of Terylene at the British Industries Fair in Birmingham. Examples of this material made up into overall clothing, covers and canvassing, ropes, cordage, and hoses will appear on Stand No. D.520. Terylene is said to retain its strength when wet and to be heat and chemical resisting in addition to being an insulating medium. A display of condenser tubes, Kynal aluminium alloy sheet and extrusions for railway rolling stock, and of copper plates and rods for locomotive fireboxes, will be a feature of the I.C.I. Metals Division stand at the fair.

**Chlorobromomethane Fire Extinguisher.**—Nu-Swift Limited is marketing a new type of pressure-operated extinguisher in which chlorobromomethane is held with absorbed carbon dioxide under constant pressure. This is claimed to be the first British-made extinguisher in which use is made of chlorobromomethane. A petrol fire 2 sq. ft. in size was extinguished in 1½ sec. in a test, while a carbon tetrachloride extinguisher took over 40 sec. to achieve the same result. The explanation of this increase in fire fighting power is the low inhibitory factor of chlorobromomethane and the thorough atomisation of chlorobromomethane by the carbon dioxide. Stated to be particularly effective on electrical equipment and organic solvent fires as well as on spill fires from aeroplanes, this extinguisher is marketed under the registered trade name of Chloro-Flash.

## Forthcoming Meetings

March 27 (*Sat.*).—Railway Students' Association. Visits to Southern Region Freight Depot at Fratton, and the British Road Service depots at Cowes and Newport, Isle of Wight. Train leaves Waterloo at 8.50 a.m.

March 29 (*Mon.*).—Institute of Transport, Berks, Bucks & Oxon Section, at the Reindeer Hotel, Mackenzie Street, Slough, at 7 p.m. Paper on "The Post Office and transport," by Mr. L. J. Taylor.

March 30 (*Tue.*).—Institute of Transport, Metropolitan Graduate & Student Society, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Election of officers and committee followed by a paper on "London Transport rail services," by Mr. H. G. M. Viney (Graduate).

March 31 (*Wed.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, S.E.1, at 5.45 for 6 p.m. Reading of prize winning essays and annual general meeting.

April 1 (*Thu.*).—Electric Railway Society at the Fred Tallant Hall, 153, Drummond Street, London, N.W.1, at 7.15 p.m. Paper on "Swiss Local Electric Railways," illustrated with colour slides, by Mr. W. J. Wyse.

April 2 (*Fri.*).—Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "The Lancashire, Derbyshire & East Coast Railway," by Mr. G. Stewart Dewsbery.

April 3 (*Sat.*).—Permanent Way Institution, Leeds & Bradford Section, at about 9.30 a.m. Morning visit to Charles H. Roe Limited, Carriage Works, Crossgates, Leeds.

April 3 (*Sat.*).—Permanent Way Institution, East Anglia Section, at Ipswich at 2.15 p.m. Paper on "My early railway service and membership of the P.W.I. since 1922," by Mr. F. Wensley.

April 3 (*Sat.*).—Permanent Way Institution, London Section. Joint meeting in London with Newcastle Section at the London Headquarters of the British Transport Commission, 222, Marylebone Road, N.W.1, at 3.15 p.m. Paper on "Horticulture and the railways—economical and decorative aspects," by Mr. B. J. J. Moran (L.T.E.).

April 5 (*Mon.*).—Institute of Transport, Metropolitan Section, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Paper on "The Port of London Authority," by Mr. E. S. Birch.

April 6 (*Tue.*).—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreational Club, Ellis Court, Leeds City North Station, at 7 p.m. Paper on "Some aspects of steelworks railroad systems," by Mr. H. G. Ross, of Steel Peech & Tozer, Sheffield.

April 7 (*Wed.*).—Institution of Mechanical Engineers, at Storey's Gate, St. James's Park, S.W.1, at 6.45 p.m. Internal combustion engine group discussion, "The performance of compression-ignition engines under abnormal conditions, etc."

April 9 (*Fri.*).—British Railways, Southern Region, Lecture & Debating Society. Visit to York.

April 10 (*Sat.*).—Railway Students' Association. Afternoon visit to Longmoor Camp and the military railway.

## Railway Stock Market

The volume of business in stock markets has been larger than usual at this period of the year, when Budget uncertainties make for caution. There is little doubt that a feeling of confidence has been inspired by the re-opening of the London gold market and the relaxation of controls on transferable sterling, because they indicate a favourable view of the outlook and in the future of the £. This in its turn has suggested that the authorities believe the trade setback in the U.S. is a temporary development and will not assume serious proportions. Moreover the prevailing assumption is that, as far as possible, the Chancellor of the Exchequer will make the Budget an incentive one to spur on efforts in export markets. There is a belief that there will be tax concessions, with possibly a cut in income tax, which has kept a hopeful atmosphere in markets. It is understandable, however, that a wait and see policy is in evidence and that buyers are rather less in evidence after the recent further rise in prices.

Dorada ordinary stock reflected profit-making after their recent rise in foreign rails, and is 71 compared with 75½ a week ago. The 6 per cent debentures remained firmly held and quoted at 90, in view of the good yield and the fact that, in the event of a take-over offer for the railway, this stock would be worth at least par.

Manila Railway issues were quieter, despite moves by some independent stockholders to attempt to get the authorities to recognise that a just settlement in respect of Manila Railroad bonds is long overdue. Manila Railway "A" and "B" debentures have remained at 83 and 73 respectively and the ordinary and preference shares at 8s. 6d. and 4s. A little buying strengthened United of Havana second income stock to 43¼; the consolidated stock remained at 6¼.

Buyers were again in evidence for Guayaquil & Quito 5 per cent bonds, which continued their rise with a further jump from 50¾ to 52½. Chilian Northern 5 per cent first debentures were quoted at 26½.

Paraguay Central 6 per cent debentures changed hands at 21. International of Central America common shares, in which no dealings have been recorded since January, were quoted at $10¼. Costa Rica ordinary stock remained at 9 and the 6½ per cent first debentures at 62.

Nitrate Rails shares were 19s. 9d. and Taltal Railway shares 14s. Antofagasta stocks recorded a few dealings. The ordinary kept at 8 and the preference stock was 39¾, while business around 66½ took place in the 5 per cent Bolivia debentures.

Canadian Pacifics at $43⅞ were lower partly owing to the rates decision. The preference stock at £66 receded on balance and the 4 per cent debentures eased to £88¼. White Pass stocks again showed a fair amount of activity but have lost ground, the no par value shares receding from $26½ to $25½, the convertible debentures from £92½ to £92 and the loan stock from £34⅜ to £33¼.

Nyasaland Railways 3½ per cent debentures were 79½. Midland of Western Australia strengthened to 21, and Emu Bay 4½ per cent debentures were 60½xd. Mexican Central debentures eased further to 80. In other directions Peruvian Corporation stocks remained rather more active, but whereas the debentures came from 55¼ to 54½, the preference stock strengthened from 6⅛ to 7 and the ordinary stock from 2½ to 2⅞.

Road transport shares attracted only moderate attention and remained firmly held with very few sellers. Devon General marked 28s. 6d. while Southdown kept at 29s. and West Riding at 27s. 3d. Lancashire Transport were 46s. 6d.xd. B.E.T. 5s "A" units eased a few pence to 43s. 4½d. but continued active because of higher dividend expectations.

Buyers were rather more in evidence for shares of locomotive builders and engineers. Beyer Peacock have remained firm at 34s. 9d.; Vulcan Foundry moved up from 22s. 7½d. to 23s. 1½d. and Birmingham Carriage from 31s. 3d. to 32s. Elsewhere, however, G. D. Peters 5s. shares fell from 25s. to 22s. despite the share bonus news, the unchanged dividend being the main influence on market sentiment. Charles Roberts 5s. shares were 16s. 7½d., "ex" the capital return. Wagon Repairs 5s. shares kept at 12s. 3d. and Gloucester Wagon 10s. shares at 17s. North British Locomotive were again around 14s. and Hurst Nelson remained at 42s. at Glasgow.

There were a number of good features among engineering and other kindred shares. Higher dividend hopes continued to influence Guest Keen, which moved up further from 54s. 6d. to 55s. and Vickers, which were 53s. 3d., compared with 52s. 10½d. a week ago. Babcock & Wilcox rose to 50s.